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Revision 2

Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions

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

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Fluor Hanford, Inc.

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EXECUTIVE SUMMARY

The Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions (Plan) describes institutional controls for the current Hanford Site *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA)[1] response actions. This Plan originally was developed to fulfill the requirement for submittal of a Sitewide plan that describes how the U.S. Department of Energy, Richland Operations Office will implement and maintain the operable unit-specific institutional controls specified in CERCLA decision documents. This revision incorporates institutional controls identified in US EPA, 2005, *Record of Decision, 221-U Facility (Canyon Disposition Initiative), Hanford Site, Washington*[2] and updates other sections of the Plan as necessary. The Plan describes how the institutional controls are implemented and maintained, and serves as a reference for the selection of institutional controls in the future. Institutional controls generally include nonengineered restrictions on activities and access to land, groundwater, surface water, waste sites, waste disposal areas, and other areas or media that contain hazardous substances to minimize the potential for human exposure to the substances. Common types of institutional controls include procedural restrictions for access, fencing, warning notices, permits, easements, deed notifications, leases and contracts, and land-use controls.

The requirements for institutional controls are recorded in CERCLA decision documents. These decision documents are part of the Administrative Record for the selection of remedial actions for each waste site and present the selected remedial actions that are chosen in accordance with CERCLA, as amended by the *Superfund Amendments and Reauthorization Act of 1986*,[3] and, to the extent practicable, 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan."[4]

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[1] *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601, et seq.

[2] US EPA, 2005, *Record of Decision, 221-U Facility (Canyon Disposition Initiative), Hanford Site, Washington*.

[3] *Superfund Amendments and Reauthorization Act of 1986*, 42 USC 11001, et seq.

[4] 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Title 40, *Code of Federal Regulations*, Part 300, as amended.

The requirement for a Sitewide plan was established in the following documents:

- EPA/ROD/R10-00/121, *Record of Decision for the USDOE Hanford 100-Area, Benton County, Washington*[5]
- EPA, 2001, *USDOE Hanford Site, First Five-Year Review Report*[6]
- EPA/ROD/R10-01/119, *Record of Decision for the USDOE Hanford 300 Area, Benton County, Washington.*[7]

This Plan also addresses the elements of EPA 540-F-00-005, *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*, OSWER 9355.0-74FS-P,[8] regarding the implementation of institutional controls. This Plan will be updated when a new CERCLA decision document listing institutional control requirements is issued.

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[5] EPA/ROD/R10-00/121, 2000, *Record of Decision* for the *USDOE Hanford 100-Area, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

[6] EPA, 2001, *USDOE Hanford Site, First Five-Year Review Report*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

[7] EPA/ROD/R10-01/119, 2001, *Record of Decision for the USDOE Hanford 300 Area, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

[8] EPA 540-F-00-005, 2000, *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups*, OSWER 9355.0-74FS-P, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

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TERMS

ALE	(Fitzner-Eberhardt) Arid Lands Ecology (Reserve)
ARAR	applicable or relevant and appropriate requirement
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ESD	explanation of significant differences
HAMMER	Hazardous Material Management and Emergency Response (Training Center)
LIGO	Laser Interferometer Gravitational Wave Observatory
NPL	"National Priorities List" (40 CFR 300, Appendix B)
O&M	operation and maintenance
OU	operable unit
Plan	Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions
RCW	*Revised Code of Washington*
RI/FS	remedial investigation/feasibility study
RL	U.S. Department of Energy, Richland Operations Office
ROD	record of decision
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
WAC	*Washington Administrative Code*
WIDS	*Waste Information Data System* database

DEFINITIONS

Action Memorandum. A primary decision document for a removal action (the equivalent of a record of decision for a remedial action). The purpose of an action memorandum is to document the need for a removal response, select the proposed action, and explain the rationale for the removal.

CERCLA Decision Document. Refers to *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* action memorandums, interim and final records of decision (record of decision amendments), and explanation of significant difference documents.

CERCLA Record of Decision. A document that states the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*-selected remedial action. One or more interim action records of decision presenting the selected interim remedial actions may be issued before the development of a final record of decision, which would specify the final remedy selection decision.

CERCLA Record of Decision Amendment. A document that amends a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* record of decision to make a fundamental change to the remedial action selected in a previously signed record of decision. Provides an explanation of how the selected remedial action for a Superfund site differs from the record of decision.

Deed. A written instrument whereby title to real estate is transferred.

Disposal (of real property). Permanent or temporary transfer of U.S. Department of Energy control and custody of real property to a third party who has the right to control, use, or relinquish control and custody of the property.

Easement. The right to use land belonging to another for a specific purpose with the owner retaining fee or title. An easement restricts, but does not abridge, the rights of the fee owner to the use and enjoyment of the easement holder's rights.

Explanation of Significant Differences. A document that revises a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* record of decision to make a significant change to the remedial action selected in a previously signed record of decision. Provides an explanation of how the selected remedial action for a Superfund site differs from the record of decision.

Final Closeout Report. Documents compliance with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* decision documents and remedial design report/remedial action work plans for a Superfund site and provides a consolidated record of all removal and remedial actions for the entire National Priorities List (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List"[9])

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[9] 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List," Title 40, *Code of Federal Regulations*, Part 300, as amended.

site. The final closeout report describes how the cleanup was accomplished and provides the overall technical justification for site deletion from the National Priorities List.

Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement).[10] An agreement among the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology to ensure investigations and response actions are taken to protect public health, welfare, and environment under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* and to achieve compliance with the *Resource Conservation and Recovery Act of 1976*[11] treatment, storage, and disposal unit regulations and corrective action provisions.

Institutional Controls. Intended as a broad term to generally include nonengineered restrictions on activities and access to land, groundwater, surface water, waste sites, waste disposal areas, and other areas or media that contain hazardous substances, to minimize the potential for human exposure to the substances. Common types of institutional controls include procedural restrictions for access, fencing, warning notices, permits, easements, deed notifications, leases and contracts, and land-use controls.

Isolated Unit. An operable unit that is not associated with a particular facility or geographic area.

National Priorities List. A list (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List") maintained by the U.S. Environmental Protection Agency of hazardous waste sites that are a national priority for longer term remedial action and response because of known releases or threatened releases of hazardous substances into the environment and that are subject to the requirements of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*. Four sites at the Hanford Site were placed on the National Priorities List in 1989. One site, the 1100 Area, was removed from the National Priorities List in 1996, and portions of the 100 Area were deleted from the National Priorities List in 1998.

Notice of Deletion. Signed by the U.S. Environmental Protection Agency and published in the *Federal Register*, it deletes an entire site from the National Priorities List (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List"). The "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300.425(e)) states that a site may be deleted from, or recategorized on, the National Priorities List when no response and/or no further response is appropriate. As described in Section 300.425(e)(3) of the "National Oil and Hazardous Substances Pollution Contingency Plan," sites deleted from the "National Oil and Hazardous Substances Pollution Contingency Plan" remain eligible for remedial actions in the unlikely event that conditions at the site warrant such action.

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[10] Ecology, EPA, and DOE, 1989a, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington, as amended.

[11] *Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq.

Notice of Partial Deletion. Signed by the U.S. Environmental Protection Agency and published in the *Federal Register*, it deletes a portion of a site from the National Priorities List (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List"). The Partial Deletions Rule allows the U.S. Environmental Protection Agency to delete portions of National Priorities List sites provided that deletion criteria are met, as required by the "National Oil and Hazardous Substances Pollution Contingency Plan."

Operable Unit. A group of land disposal sites placed together for the purposes of doing a remedial investigation/feasibility study and subsequent cleanup actions. The primary criteria for placement of a site into an operable unit include geographic proximity, similarity of waste characteristics and site type, and the possibility for economies of scale. (Source: Ecology, EPA, and DOE, 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Appendix A[12]). Soil and groundwater contamination generally are placed in separate operable units. Operable units may be designated as "isolated units" when not associated with a particular facility or geographic area.

Remedial Design and Remedial Action (RD/RA) Work Plan. This definition reflects changes to the Tri-Party Agreement Action Plan (resulting from Change Control Form P-11-06-01) to clarify requirements for remedial design and remedial action deliverables. This is the plan for implementing the remedy selected in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 remedial action decision documents. All remedial design/remedial action activities must conform to the remedy set forth in the related record of decision (ROD) or other decision documents (e.g., ROD amendment). The RD/RA work plan contains a conceptual-level design.

Remedial Design Report. This definition reflects changes to the Tri-Party Agreement Action Plan (resulting from Change Control Form P-11-06-01) to clarify requirements for remedial design and remedial action deliverables. This report documents the 90% level of the remedial design. It may contain a different level of design than 90% if agreed to by the lead regulatory agency. Due to the Tri-Party Agreement Action Plan Section 11.6 requirement for an RD/RA work plan to be delivered within 180 days of signature of the ROD, the RD Report is likely to be a separate deliverable because the RD/RA work plan submittal only requires a conceptual-level design.

Remedial Design Report/Remedial Action Work Plan. The plan for implementing the remedy selected in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 remedial action decision documents. All remedial design/remedial action activities must conform to the remedy set forth in the related record of decision (ROD) or other decision document (e.g., ROD amendment).

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[12] Ecology, EPA, and DOE, 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Tri-Parties. The parties (U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy) to the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology, EPA, and DOE, 1989a).

Tri-Party Agreement. See *Hanford Federal Facility Agreement and Consent Order* (Ecology, EPA, and DOE, 1989b).

Waste Information Data System.[13] A database that identifies all waste management units on the Hanford Site, describes the status of each unit, and includes descriptive information (e.g., location, waste types). (Source: Ecology, EPA, and DOE, 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Appendix A). The system is maintained by the U.S. Department of Energy, Richland Operations Office in accordance with the *Waste Information Data System* change control system, which documents and traces additions, deletions, and/or other changes dealing with the status of waste management units.

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[13] *Waste Information Data System* Report, Hanford Site database.

1.0 INTRODUCTION

The Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions (Plan) describes the institutional controls for the Hanford Site and how they are implemented and maintained in accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) decision documents. The decision documents present the selected remedial actions chosen in accordance with CERCLA, as amended by the *Superfund Amendments and Reauthorization Act of 1986* and 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan." CERCLA decision documents are developed as part of the cleanup mission at the Hanford Site, which began in 1989 following the end of the national defense mission. The selected remedies chosen under CERCLA may include institutional controls. Institutional controls primarily are administrative in nature and typically are used to augment the engineered components of a selected remedy to minimize the potential for human exposure to contamination. Common types of institutional controls include procedural restrictions for access, fencing, warning notices, permits, easements, deed notifications, leases and contracts, and land-use controls.

This Plan serves as a reference for the selection of institutional controls in the future. The Appendix lists the current requirements for institutional controls. Although not a program or budget document, this Plan provides project managers with information on which to develop funding requests.

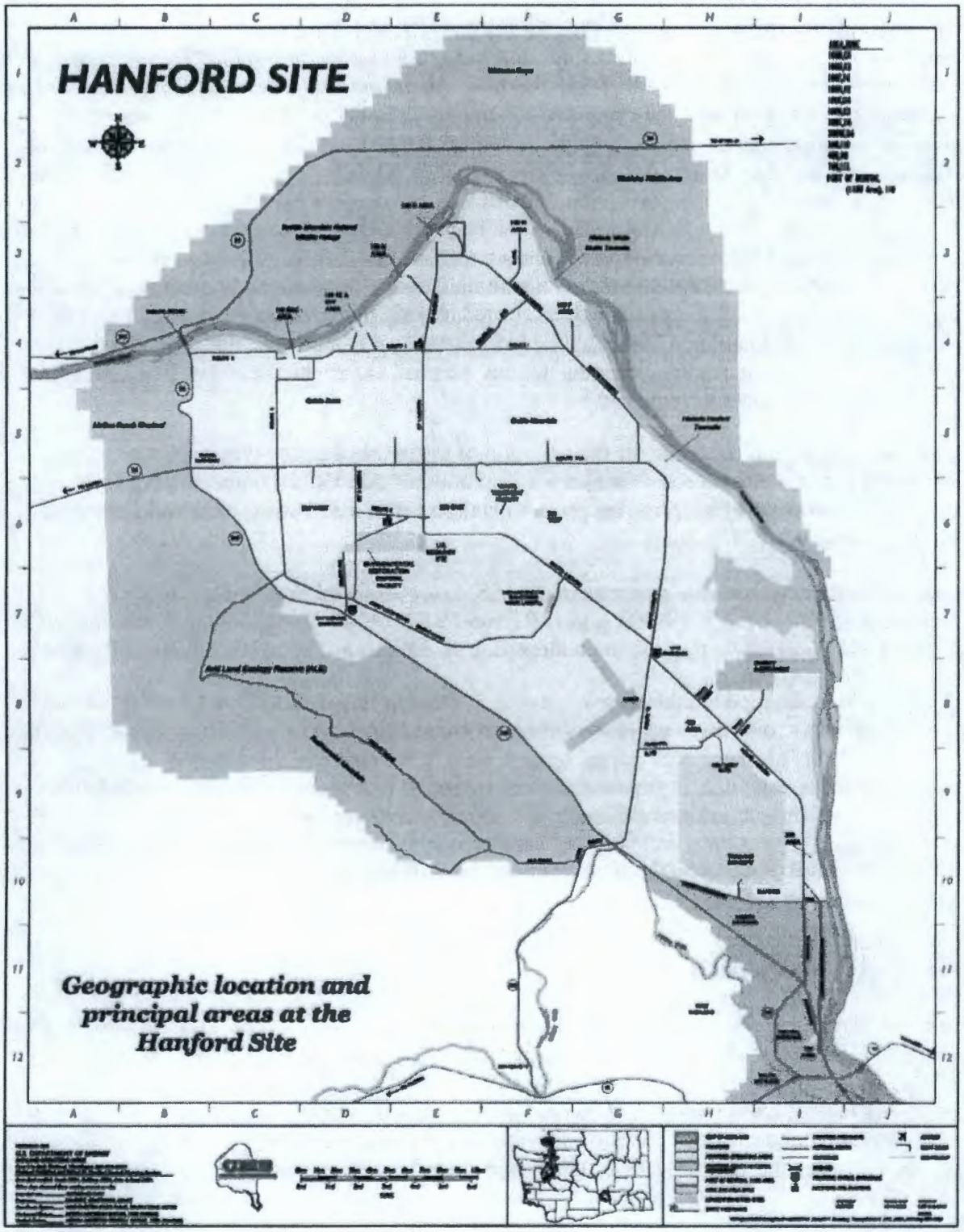
This Plan also addresses the elements of the U.S. Environmental Protection Agency (EPA) Region 10 guidance (EPA 1999, *Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities*) regarding the implementation of institutional controls at Federal facilities.

The focus of institutional controls may change as cleanup is completed. Active institutional controls, such as controlling access to the site or controlling activities that may affect remedial action, generally are employed during remediation. After cleanup is completed, passive institutional controls such as permanent markers, public records and archives, or regulations regarding land or resource use are employed. Some active institutional controls such as monitoring and controlling access to the site also may be employed after cleanup is completed. CERCLA record of decision (ROD) documents identify specific requirements for institutional controls.

1.1 SITE BACKGROUND

The Hanford Site in southeastern Washington State is 1,517 km^2 (586 mi^2) of semiarid shrub and grasslands located just north of the confluence of the Snake and Yakima Rivers with the Columbia River (Figure 1-1). Significant natural, biological, and cultural resources exist on site, including habitat for numerous endangered, protected, and listed species, as well as significant historical and cultural sites. The Site is bisected by the last free-flowing stretch of the Columbia River, known as the Hanford Reach, and has restricted public access.

Figure 1-1. Hanford Site.



The Hanford Site was acquired by the Federal government in 1943 and, until 1989, was dedicated primarily to the production of plutonium for national defense and the management of the resulting waste. With the shutdown of the production facilities in the 1970s and 1980s, the U.S. Department of Energy (DOE) ended the production of nuclear materials for weapons at the Hanford Site.

Approximately 6 percent of the land area has been disturbed and has been used actively for industrial purposes. Approximately 259 km^2 (100 mi^2) of groundwater have been affected (e.g., drinking water standards are exceeded), because of past waste management practices. A significant portion of the remainder of the Hanford Site continues to serve as a buffer for safety and emergency response purposes, and to protect human health and the environment from remaining hazards.

The facilities located on the Hanford Site include previously operating reactors primarily used for plutonium production (shut down), plutonium processing facilities (shut down), waste management facilities, laboratories, research, and other support facilities.

Current activities at the Hanford Site are focused on waste management, environmental restoration, facility stabilization, and research and technology development.

The DOE manages operations on the Hanford Site through contractors. Each contractor is responsible for the safe, environmentally sound maintenance and management of its facilities and operations, management of its waste, and monitoring of its operations and effluents for environmental compliance.

1.2 NATIONAL PRIORITIES LIST SITES AT THE HANFORD SITE

In October 1989, the Hanford Site was placed on the National Priorities List (NPL) (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List"). In anticipation of the NPL listing, the U.S. Department of Energy, Richland Operations Office (RL) entered into an agreement with EPA and the Washington State Department of Ecology (Ecology). This agreement, the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement [Ecology et al. 1989]), established the legal framework and schedule for cleanup at the Hanford Site. For cleanup of each operable unit (OU), the Tri-Party Agreement designates either EPA or Ecology as the lead regulatory agency.

Four Hanford Site areas were designated as separate NPL sites: the 100, 200, 300, and 1100 Areas. Each NPL site is further divided into OUs. The specific waste sites and OUs are listed in Appendix C of the Tri-Party Agreement (Ecology et al. 1989).

The EPA, Region 10, deleted the 1100 Area from the NPL on September 30, 1996. The EPA, Region 10, also deleted portions of the 100 Area NPL Site on July 8, 1998. The portions deleted were waste sites located in the 100-IU-1 and 100-IU-3 OUs.

At waste sites where the remedial action does not result in fully unrestricted use of the site, operation and maintenance (O&M) measures may continue at the site to ensure effective implementation of the remedial action. O&M measures include the operation and maintenance of engineered remedies, such as landfill caps, gas collection systems, and groundwater containment. O&M measures also may include requirements for maintaining institutional controls. O&M measures are initiated after the remedy is constructed and is determined to be operating properly and successfully.

When all cleanup goals have been achieved for a waste site, it can be deleted from the NPL in accordance with the procedures outlined in 40 CFR §300.425(e), "Establishing Remedial Priorities." A site may be deleted from the NPL and still have residual contamination. Any institutional controls required following the deletion would be specified in the final ROD and documented in the waste site's final closeout report. Furthermore, deletion from the NPL does not preclude eligibility for subsequent response actions if future site conditions or circumstances warrant.

1.2.1 100 Area National Priorities List Site

The 100 Area NPL site is located in the northern portion of the Hanford Site. The portion north and east of the Columbia River is the Wahluke (or North) Slope, which contained contaminants remaining from anti-aircraft missile bases. The portion south and west of the river is the site of six reactor areas on which are located nine former nuclear defense production reactors. Other contamination and cleanup needs in the 100 Area NPL site include contaminated groundwater and contaminated structures, such as buildings, buried pipelines, buried and exposed disposal cribs, and trenches. Spent nuclear fuel from the reactors in the 100 Area has been relocated to a dry storage facility in the 200 Area on the Hanford Site Central Plateau.

Source contamination in the 100 Area is grouped geographically into 17 OUs. These OUs contain about 400 waste sites, each of which can be categorized as one of four different types: contaminated soil, structures, debris, or burial grounds. Since the 100 Area was listed in the NPL, 17 CERCLA decision documents have been approved and one Notice of Partial Deletion has been published, which deleted a portion of the 100 Area (100-IU-1 OU, the Riverland Rail Yard, and 100-IU-3 OU, which includes several waste sites on the Wahluke Slope). Remediation is achieved in the source waste sites by reducing concentrations of, or limiting exposure pathways to, contaminants in the upper 4.6 m (15 ft) of the soil (residential land-use scenario). The levels of reduction will be such that the total dose for radionuclides does not exceed 15 mrem/year above Hanford Site background for 1,000 years following remediation and RCW 70.105D, "Public Health and Safety," "Hazardous Waste Cleanup -- Model Toxics Control Act," Method B levels for nonradionuclides. Excavation below 4.6 m (15 ft) will require institutional controls due to the presence of contaminants. Institutional controls that limit access to the site and restrict use of groundwater will be in place until the remedial action objectives have been attained.

The remedial actions defined in the decision documents have been initiated and completed on about half of the waste sites. Tri-Party Agreement Milestone M-16-00F established the date for completion of the 100 Area remedial actions. The current Tri-Party Agreement schedule

(Milestone M-16-00) to complete remedial actions for all non-tank-farm OUs is September 2024, with all remediation work identified in interim action RODs to be completed by December 2012.

1.2.2 200 Area National Priorities List Site

The 200 Area NPL site consists of the 200 East and 200 West Areas, along with a smaller 200 North Area, located on the Central Plateau. The 200 East and 200 West Areas were used for chemical processing and waste management. These activities resulted in large amounts of contaminated soil and groundwater. Low-level radioactive and hazardous chemical wastes were discharged into the soil column. High-level radioactive waste from the processing facilities was disposed of in tanks. Leaks from piping and tanks caused further contamination of the soil. Operations in the 200 North Area were related mainly to irradiated nuclear fuel storage. Ongoing waste management activities at the 200 Area include active treatment, storage, and/or disposal facilities, including the Environmental Restoration Disposal Facility and high-level nuclear waste tank farm operations.

The 200 Area NPL site is divided into 23 soil OUs that contain approximately 700 soil waste sites and associated structures. The OUs are organized by discharge type and waste site type. Examples of discharge types include solid waste, cooling water, process water, and uranium-rich waste. Examples of waste site types include pond, crib, ditch, tank, and burial ground. In addition to the 23 soil OUs, the 200 Area NPL site has four groundwater OUs. The 200 West Area contains the 200-ZP-1 OU and the 200-UP-1 OU. The 200 East Area contains the 200-BP-5 OU and the 200-PO-1 OU. US EPA, 2005, *Record of Decision, 221-U Facility (Canyon Disposition Initiative), Hanford Site, Washington*, requires institutional controls during cleanup activities and after cleanup activities are completed.

1.2.3 300 Area National Priorities List Site

The 300 Area NPL site encompasses a large portion of the area just north of the city of Richland, Washington. Although a significant portion of the 300 Area NPL site is not contaminated, the nominal boundaries (i.e., the boundaries encompass all associated NPL waste sites, but do not include the land between the waste sites) of the 300 Area NPL site are defined so as to encompass various scattered waste sites associated with historical 300 Area operations, including portions of the 600 Area. Use of the 300 Area began in 1943, and facilities primarily were associated with reactor fuel fabrication and research and development activities for the Hanford Site. Over the years, fuel fabrication and laboratory facilities located in the 300 Area released contaminants to the surface, soil column, and groundwater. Waste from 300 Area operations also was disposed of in designated landfills and burial grounds and discharged to unlined surface ponds and trenches.

The 300 Area NPL site consists of three OUs. The 300-FF-1 and 300-FF-2 OUs address soil contamination areas and burial grounds associated with operations in the 300 Area. The 300-FF-5 OU addresses groundwater contamination beneath the burial grounds and soil waste sites. Cleanup and monitoring activities have been initiated on remedial actions authorized through two RODs and three ROD explanations of significant differences, and cleanup has been completed on removal actions authorized through three CERCLA action memorandums.

Remediation is achieved for source sites through compliance with WAC 173-340-745, "Model Toxics Control Act -- Cleanup," "Soil Cleanup Standards for Industrial Properties" cleanup values for organic and inorganic chemical (i.e., nonradionuclide) constituents in soils to support industrial land use and total dose for radionuclides below 15 mrem/year above Hanford Site background. Tri-Party Agreement Milestones M-16-03A and M-16-00B established a September 2012 date for completion of all 300 Area interim remedial actions.

1.2.4 1100 Area National Priorities List Site

The 1100 Area was deleted from the NPL on September 30, 1996. Although the site is deleted from the NPL, the DOE is required to maintain institutional controls as required by DOE 1996, *Superfund Final Closeout Report, U.S. Department of Energy 1100 Area*, and EPA/ROD/R10-93/063, *Record of Decision for the USDOE Hanford 1100 Area Final Remedial Action.*

The ownership of a portion of the property in the 1100 Area NPL site (the former 1100 Area and 3000 Area) has been transferred to the Port of Benton. The (Fitzner-Eberhardt) Arid Lands Ecology Reserve (ALE) and the Wahluke Slope, which is included in the Hanford Reach National Monument, is managed by the U.S. Fish and Wildlife Service, under a memorandum of understanding (RL 2001, *First Amended Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service and the U.S. Department of Energy, Richland Operations Office for the Operation of the Fitzner-Eberhardt Arid Lands Ecology Reserve at the Hanford Site; Fourth Amendment to the Wahluke Slope Permit*).

2.0 INSTITUTIONAL CONTROLS

This section defines institutional controls and describes the regulatory basis for the institutional controls and the different types of institutional controls.

2.1 DEFINITION OF INSTITUTIONAL CONTROLS

EPA 1999 defines institutional controls as, "Institutional controls ...generally include all nonengineered restrictions on activities, access, or exposure to land, groundwater, surface water, waste and waste disposal areas and other areas or media.

Some common examples of tools to implement institutional controls include restrictions on use or access, zoning, governmental permitting, public advisories, or installation master plans. Institutional controls may be temporary or permanent restrictions or requirements."

Institutional controls are used at the Hanford Site for the following reasons.

- Limit access to, or uses of, land, facilities, and other real properties.
- Protect the environment (including cultural and natural resources).
- Maintain the physical safety and security of DOE facilities.
- Prevent or limit inadvertent human and environmental exposure to residual contaminants and other hazards.
- Protect and maintain effectiveness of the remedy.

2.2 REGULATORY BASIS FOR INSTITUTIONAL CONTROLS

Remediation at most DOE sites is conducted under CERCLA or the *Resource Conservation and Recovery Act of 1976*. Both CERCLA and the *Resource Conservation and Recovery Act of 1976* require cleanup of releases of hazardous substances to the environment to levels protective of human health and the environment.

In 40 CFR 300, EPA stated that institutional controls should be used primarily to supplement engineering controls, but did not forbid the use of institutional controls as the sole remedy. In 40 CFR 300.430, the following language is provided for institutional controls:

> "EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial

investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of [the] remedy." [40 CFR 300.430(a)(1)(iii)(D)]

When institutional controls are part of the remedy, they are listed in the CERCLA decision documents (see the Appendix for a list of Hanford Site CERCLA decision documents). These decision documents provide regulatory basis for institutional controls.

DOE P 454.1, *Use of Institutional Controls*, documents a commitment to the effective and appropriate use of institutional controls; establishes a general framework for a consistent approach to the use of institutional controls throughout the Department; and recognizes that DOE sites need flexibility to tailor institutional controls to specific needs, jurisdictions, and time periods. DOE P 454.1 delineates how the DOE, including the National Nuclear Security Administration, will use institutional controls in the management of resources, facilities, and properties under its control and in the implementation of programmatic responsibilities.

2.3 TYPES OF INSTITUTIONAL CONTROLS

Several commonly used terms exist for describing or classifying institutional controls. These classifications often are not mutually exclusive or only apply to certain types of institutional controls.

EPA generally classifies institutional controls into the following four general categories:

1. Governmental controls (e.g., zoning, local ordinances)
2. Proprietary controls (e.g., easements, restrictive covenants)
3. Enforcement and permit tools (e.g., consent decrees, administrative orders)
4. Informational tools (e.g., notices filed in the land records, advisories).

DOE classifies institutional controls into the following categories:

1. Active/Passive Controls

   The concepts of active and passive controls have long been understood to apply to the long-term management of radioactive waste. Active controls require clear institutional and human responsibilities and the active performance of responsibilities such as controlling access to a disposal site by means such as guards, performing maintenance operations or remedial actions at a site, controlling or cleaning up releases from a site, or monitoring parameters related to disposal system performance. Passive controls are defined by their dependence on the design of controls and structures such as permanent markers placed at a disposal site; public records and archives; government ownership and regulations regarding land or resource use; and other methods of preserving knowledge about the location, design, and contents of a disposal system.

2. Proprietary/Governmental Controls

   This classification of institutional controls is based on the legal authority of landowners to control use of their land. Proprietary controls, such as easements, are based on the rights associated with ownership of an interest in land. Government controls rely on the powers of governments to protect the public health and safety through zoning, legislation, land ownership, or permit programs.

3. Structural/Nonstructural Controls

   Structural controls include physical barriers (e.g., gates, fences, and natural barriers) to keep trespassers away from a site, signs to warn people of dangers, and engineered barriers (e.g., tanks) restricting or containing actual or potential contaminant migration. Nonstructural controls are all other limitations on the use of land that do not require physical means of exposure prevention.

Using the guidance provided by EPA and the DOE, the institutional controls at the Hanford Site generally are divided into the following categories:

- Warning Notices (structural/nonstructural controls, active/passive controls)
- Entry Restrictions (structural/nonstructural controls)
- Land-Use Management (proprietary/governmental controls)
- Groundwater-Use Management (proprietary/governmental controls)
- Waste Site Information Management (informational tools).

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3.0 INSTITUTIONAL CONTROLS AT THE HANFORD SITE

This chapter describes the types of institutional controls used and their implementation at the Hanford Site. Additional information is provided for institutional controls requirements specific to the four NPL sites.

3.1 INSTITUTIONAL CONTROLS AND CERCLA DECISION DOCUMENTS

Institutional controls requirements may be specified in the following CERCLA decision documents:

- ROD
- ROD amendment
- Explanation of significant differences.

Action memorandums are another type of decision document that is used for removal actions. However, because removal actions usually are temporary measures and are not intended to fulfill NPL cleanup requirements, institutional controls typically are not specified in the action memorandums. To date, action memorandums issued to the Hanford Site do not include institutional controls. Therefore, action memorandums are not considered in this Plan.

The CERCLA decision documents that have been issued for the 100, 200, 300, and 1100 Area NPL sites are listed in Tables 3-1, 3-2, 3-3, and 3-4, respectively. Each table includes the type of decision documents issued for that particular NPL site in chronological order (from most recent to the earliest), the dates the documents were signed, and the OU/remedial action addressed by each document. Some of the documents listed may not specify the institutional controls. A complete listing of the institutional controls identified in the CERCLA decision documents is provided in the Appendix.

Table 3-1. 100 Area National Priorities List Site Decision Documents. (2 Pages)

Type of Decision Document	Signature Date	Operable Unit
ESD	04/26/04	100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 10-KR-1, 100-KR-2, I00-IU-2, 100-IU-6, (100 Area Remaining Sites), and 200-CW-3 Operable Units
ESD	05/21/03	100-NR-1, 100-NR-2
ESD	03/31/03	100-HR-3
ROD (Interim Remedial Action)	09/25/00	100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 (100 Area Burial Grounds)
ROD ESD	06/15/00	100-IU-6
ROD (Interim Remedial Action)	01/18/00	100-NR-1

Table 3-1. 100 Area National Priorities List Site Decision Documents. (2 Pages)

Type of Decision Document	Signature Date	Operable Unit
ROD Amendment (Interim Remedial Action)	10/24/99	100-HR-3
ROD (Interim Remedial Action)	09/29/99	100-NR-1, 100-NR-2
ROD (Interim Remedial Action)	09/17/99	100-KR-2, Spent Fuel
ROD (Interim Remedial Action)	07/15/99	100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 10-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, (100 Area Remaining Sites), and 200-CW-3 Operable Units
ROD Amendment (Interim Remedial Action)	04/04/97	100-BC-1, 100-DR-1 100-HR-1
ROD (Interim Remedial Action)	03/26/96	100-HR-3, 100-KR-4
ROD (No Action)	02/02/96	100-IU-1, 100-IU-3, 100-IU-4, 100-IU-5
ROD (Interim Remedial Action)	09/28/95	100 BC-1, 100-DR-1 100-HR-1

NOTE: The 100-IU-1 Operable Unit, the Riverland Rail Yard, and 100-IU-3 Operable Unit, which includes several waste sites in the Wahluke (or North) Slope, were deleted from the National Priorities List in 63 FR 36861, "Notice of Partial Deletion of the Hanford 100 Area (U.S. DOE) Superfund Site from the National Priorities List."

ESD = explanation of significant differences.
ROD = record of decision.

Table 3-2. 200 Area National Priorities List Site Decision Documents.

Type of Decision Document	Signature Date	Operable Unit
ROD	09/30/05	221-U Facility (Canyon Disposition Initiative)
ROD Amendment	01/13/02	ERDF
Interim ROD	07/15/99	100 Area Remaining Sites, 200-CW-3
ROD Amendment	03/25/99	ERDF
ROD Amendment	09/25/97	ERDF
ROD (Interim Remedial Action)	02/11/97	200-UP-1
Explanation of significant differences	07/30/96	ERDF
ROD (Interim Remedial Action)	05/24/95	200-ZP-1
ROD	01/20/95	ERDF

ERDF = Environmental Restoration Disposal Facility.
ROD = record of decision.

Table 3-3. 300 Area National Priorities List Site Decision Documents.

Type of Decision Document	Signature Date	Operable Unit
ESD	05/04	300-FF-2
ROD (Interim Remedial Action)	04/04/01	300-FF-2
ROD ESD	06/15/00	300-FF-5
ROD ESD	01/29/00	300-FF-1
Final and Interim Remedial Action ROD	07/17/96	300-FF-1(Final), 300-FF-5 (Interim)

ESD = explanation of significant differences.
ROD = record of decision.

Table 3-4. 1100 Area National Priorities List Site Decision Documents.

Type of Decision Document	Signature Date	Operable Unit
ROD	09/24/93	IU-1, EM-1, EM-2, EM-3

NOTE: DOE 1996, *Superfund Final Closeout Report, U.S. Department of Energy 1100 Area*, was issued for IU-1, EM-1, EM-2, and EM-3 on July 25, 1996. The entire 1100 Area National Priorities List site was deleted from the National Priorities List in a Notice of Deletion (63 FR 28317, "Notice of Intent to Delete Operable Units 100-IU-1 and 100-IU-3 of the Hanford 100 Area Superfund Site from the National Priorities List").

3.2 SITEWIDE INSTITUTIONAL CONTROLS REQUIREMENTS

The requirement for a Sitewide plan was established in the following documents:

- EPA/ROD/R10-00/121, *Record of Decision for the USDOE Hanford 100-Area, Benton County, Washington*
- EPA, 2001, *USDOE Hanford Site, First Five-Year Review Report*
- EPA/ROD/R10-01/119, *Record of Decision for the USDOE Hanford 300 Area, Benton County, Washington.*

The 100 Area Burial Ground ROD (EPA/ROD/R10-00/121) lists the following specific Sitewide requirements.

- "DOE shall submit a Sitewide institutional controls plan that includes the applicable institutional controls for the 100 Area OUs. This Sitewide plan will be submitted to EPA and Ecology for approval as a primary document under the Tri-Party Agreement by July 2001. This plan shall be updated by DOE periodically at the request of EPA or Ecology. At a minimum, the plan shall contain the following:"
  - "Include a comprehensive facility-wide list of all areas or locations covered by any and all decision documents at the Hanford Site that have or should have institutional

controls for protection of human health or the environment. The information on the list will include, at a minimum, the location of the area, the objectives of the restriction or control, the time frame that the restrictions apply, the tools and procedures DOE will use to implement the restrictions or controls and to evaluate the effectiveness of these restrictions or controls."

- "Cover, and legally bind where appropriate, all entities and persons, including, but not limited to, employees, contractors, lessees, agents, licensees, and visitors. In areas where DOE is aware of routine trespassing, trespassers must also be covered."

- "Cover all activities, and reasonably anticipated future activities, including, but not limited to, any future soil disturbances, routine and non-routine utility work, well placement and drilling, recreational activities, national monument-related uses, groundwater withdrawals, paving, construction, renovation work on structures, tribal use, or other activities."

- "Include a tracking mechanism that identifies all land areas under restriction or control."

- "Include a process to promptly notify both EPA and Ecology before any making anticipated change in land-use designation, restriction, land users or activity for any institutional controls required by a decision document."

- "DOE will notify EPA and Ecology immediately upon discovery of any activity that is inconsistent with the OU-specific institutional controls objectives for the Site, or of any change in the land use or land-use designation of a site. DOE will work together with EPA and Ecology to determine a plan of action to rectify the situation, except in the case where DOE believes the activity creates an emergency situation, DOE can respond to the emergency immediately upon notification to EPA and Ecology and need not wait for EPA or Ecology input to determine a plan of action. DOE will also identify deficiencies with the institutional controls process, evaluate how to correct the process to avoid future problems, and implement these changes after consulting with EPA and Ecology."

- "DOE will identify a point of contact for implementing, maintaining, and monitoring institutional controls for the 100 Area, as well as the Hanford Site."

- "DOE will comply with Tri-Party Agreement requirements to request and obtain funding to institute and maintain institutional controls as a compliance requirement under the Tri-Party Agreement."

- "DOE will notify EPA and Ecology at least 6 months before any transfer, sale, or lease of any property subject to institutional controls required by a CERCLA decision document so that EPA and Ecology can be involved in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. If it is not possible for DOE to notify EPA and Ecology at least 6 months before any transfer, sale, or lease, then DOE will notify EPA and Ecology as soon as

possible, but no later than 60 days before the transfer, sale, or lease of any property subject to institutional controls."

- "DOE will not delete or terminate any institutional controls unless EPA and Ecology have concurred in the deletion or termination."

- "DOE will evaluate the implementation and effectiveness of institutional controls for the Hanford Site and the 100 Area OUs on an annual basis. The annual institutional controls monitoring report shall be written by DOE and submitted to EPA and Ecology as a primary document under the Tri-Party Agreement. The report shall be consistent with the requirements established in the Sitewide institutional controls plan. Justification will be provided for any information that is not included as required by the Sitewide plan. The annual monitoring report will be due on September 30 of each year and will summarize the results of the evaluation for the preceding calendar year. In addition, after the comprehensive Sitewide approach is well established and DOE has demonstrated its effectiveness, the frequency of future monitoring reports may be modified subject to approval by EPA and Ecology. The institutional controls monitoring report, at a minimum, must contain:"

  - "A description of how DOE is meeting the Sitewide institutional controls requirements;"

  - "A description of how DOE is meeting the OU-specific objectives, including results of visual field inspections of all areas subject to OU-specific restrictions;"

  - "An evaluation of whether or not all OU-specific and Sitewide institutional controls requirements are being met;"

  - "A description of any deficiencies and what efforts or measures have been or will be taken to correct problems."

  - "EPA and Ecology review of the institutional controls monitoring report will follow existing procedures for agency review of primary documents."

Table 3-5 identifies types, the mechanism, and objective for institutional controls implemented at the Hanford Site.

The institutional controls help protect DOE employees, DOE contractors, and one or more of the following:

- Non-DOE entities using DOE land – individuals who are associated with an organization, other than DOE or its contractors, that is located on the Hanford Site or that is conducting activities on the Hanford Site

- Hanford Site visitors – individuals who access the Hanford Site for a Hanford Site-related purpose (e.g., public tour)

- Inadvertent intruders – individuals who inadvertently access the Hanford Site (e.g., inadvertent access to the Hanford Site along the Columbia River shoreline for recreational purposes)

- Remedies such as engineered barriers or a vegetative soil layer.

Table 3-5. Types, Objectives, and Mechanisms for Sitewide Institutional Controls.

Types	Objectives	Mechanisms
Warning Notices	Provide visual identification and warning of hazardous or sensitive areas.	Signs
Entry Restrictions	• Control human access to hazardous or sensitive areas. • Ensure adequate training for those who enter hazardous or sensitive areas. • Avoid disturbance and exposure to remedies such as engineered barriers or an effective vegetative soil layer. • Provide a basis for the enforcement of access restrictions.	Procedural requirements for access, warning signs
	• Prevent unauthorized human access to hazardous or sensitive areas. • Provide protective barriers to standard industrial hazards. • Provide visual warnings. • Avoid disturbance and exposure to remedies such as engineered barriers or an effective vegetative soil layer.	Fencing
Land-Use Management	• Ensure that use of the land is compatible with any hazards that exist. • Ensure that any changes in use of the land are adequately assessed before being allowed. • Ensure that the institutional controls are maintained beyond change of ownership, as appropriate.	Land-use and real property controls
	• Avoid unplanned disturbance or infiltration. • Inform and protect workers regarding potential exposure to hazardous waste. • Avoid the creation of potential pathways for the migration of hazardous waste.	Excavation permits
Groundwater-Use Management	Ensure proper use of groundwater.	Groundwater controls
Waste Site Information Management	Maintain and provide access to information on the location and nature of contamination.	Administrative

3.2.1 Description of the Sitewide Institutional Controls

The plan to implement institutional controls on the Hanford Site for CERCLA-based remedial actions is provided in the following sections for each of the five categories of controls.

3.2.2 Warning Notices

Warning notices are signs that provide visual identification and warning of hazardous or sensitive areas. The DOE generally uses two types of warning signs that, while not specifically designed as CERCLA notification signs, can serve the same purpose. The two types of signs are "No Trespassing" signs (Figure 3-1) and notification signs for hazardous (including radiological control) and sensitive areas (Figure 3-2).

Figure 3-1. No Trespassing Sign.

Warning notices for radiological control areas are defined in a rigorous radiological control program that limits access to the radiological controlled areas. This program includes barriers (e.g., fences) and signs that provide visual warning for radiological controlled areas.

The fences and signs along the Hanford Site's perimeter and public road corridors are designed and maintained in accordance with DOE Orders. In addition, the DOE identifies and implements the structures, systems, and components necessary to reduce the risks posed by facilities and their operations by performing a hazard and accident analysis. General Site criteria for signs and markers related to Site safeguards and security include the following references.

Figure 3-2. Notification Signs for a Hazardous Area.

Signs and markers for radiological controls are in accordance with the 10 CFR 835, "Occupational Radiation Protection" Final Rule and Section 229 of the *Atomic Energy Act of 1954*, as amended.

The DOE has placed yellow "No Trespassing" signs every 152 m (500 ft) along the perimeter of the Hanford Site and on the public roadways that pass through the Hanford Site (Figure 3-1). The sign also says that the unauthorized entry upon any facility, or real property in the custody of DOE, which has been subject to the provisions contained in 10 CFR 860, "Trespassing on Department of Energy Property," is prohibited.

3.2.3 Entry Restrictions

The DOE strives to prevent entry into waste sites in accordance with the institutional controls requirements of the CERCLA decision documents and as described in applicable work plans. Entry restrictions are institutional controls that prevent or limit the access of humans to particular geographic areas. Procedural requirements for access and fencing are the two main types of access controls.

3.2.3.1 Procedural Requirements for Access

The objectives of the procedural requirements for access are as follows.

- Control human access to hazardous or sensitive areas.
- Ensure adequate training for those who enter hazardous or sensitive areas.
- Avoid disturbance and exposure to hazardous materials.
- Provide a basis for the enforcement of access restrictions.

Security badges must be worn by employees, contractors, and others who require access to restricted areas. Qualified personnel possessing security badges can escort personnel who do not possess security badges (visitors still require visitor badges) to access the restricted areas. Visitors remaining on some roadways in the 600 Area can drive up to the Hanford Site access barricades (i.e., Rattlesnake, Yakima, and Wye) without a security badge. Signs at the Hanford Site entrances identify the requirements for access.

Trespassing on the Hanford Site is prohibited and subject to criminal prosecution under state and Federal laws. The badging program controls access to restricted areas. These controls comply with DOE O 470.1, *Safeguards and Security Program*. These controls are defined and implemented through the Security and Emergency Services Management System Description described in the RL Integrated Management System and the specific contractor procedures. The RL Integrated Management System is available on the RL Web page. Visitors, Hanford Site contractors, and DOE personnel are required to have a badge to access the restricted areas. Before receiving a badge, all must receive the level of training required to access controlled areas or to perform work. This includes training on recognizing signs and hazard postings and following appropriate procedures. The DOE maintains a central badging office, and guards are stationed at the Rattlesnake, Yakima, and Wye barricades to prevent unauthorized access.

The procedural requirements for access address the following items:

- Badges
  - Wearing and displaying the badges at all times while on the Hanford Site and presenting of badges on request
  - Badging for employees, visitors, and foreign nationals
  - Levels of security and badging required based on specialized need, such as the presence of special nuclear material or firing ranges.
- Verification and Tracking
  - Verification by personnel of proper badges at entry points where necessary to check identity and to control unauthorized entry
  - Employee's responsibilities when hosting Site visitors, including knowing the visitor's location at all times and the work being performed.
- Orientation and Training
  - Appropriate training for visitors and workers regarding policies and procedures, including safety, security, and escorting requirements, as well as emergency preparedness information
  - Escort training, which provides qualifications for personnel who will act as escorts.

- Violations
  - Reporting of security incidents
  - Reporting of trespass incidents to regulators and local authorities in accordance with DOE policy, contracts, and as required by regulatory decision documents.

3.2.3.2 Fencing

The objective of fencing is to prevent unauthorized human and, in some cases, large animal access to hazardous or sensitive areas; provide protective barriers to remedies such as engineered barriers or vegetative soil layers; and provide visual warnings. If a fence is considered to be a component of the institutional controls for a particular waste site (rather than a component of the engineered remedy), the decision document associated with the waste site should indicate this distinction.

Different types of fences are used depending on the level of security required. The security fences serve as an effective access control by limiting access to those authorized personnel who have the proper training to enter these areas safely. Fencing requirements for institutional controls may be defined in the selected remedy. The need for fencing and the type of fence are determined by the residual risk of the final remedy.

Signs and fences required by CERCLA decision documents and described in applicable work plans will be maintained through regular surveillance activities in accordance with contractor procedures. Deficiencies (e.g., signs missing, fences down) are identified and corrective action is taken through the approved work control procedures.

3.2.3.3 Entry Restrictions for the Three National Priorities List Sites and the 1100 Area Site

The entry restrictions for the three NPL sites and the 1100 Area site are described in the following subsections.

3.2.3.3.1 100 and 200 Area National Priorities List Sites

- A Hanford Site security badge is required for entry.
- Access is monitored by Hanford Patrol at public access points (Rattlesnake, Yakima, and Wye barricades).
- Fences are around much of the Hanford Site.
- The 200 East and 200 West Areas are fenced.
- High-hazard areas are secured by additional fences.
- Waste sites are marked with appropriate signage and barriers.

3.2.3.3.2 300 Area National Priorities List Site

- The 300 Industrial Area perimeter is fenced.
- A Hanford Site security badge is required for entry into the 300 Industrial Area.
- Warning signs are posted limiting off-road access.

3.2.3.3.3 1100 Area Site (Deleted from National Priorities List in 1996)

- No Hanford Site security badge is required for access; however, access to the ALE, which is managed by the U.S. Fish and Wildlife Service, is restricted.

- Horn Rapids Landfill (closed) is fenced, with warning signs and restricted access.

3.2.4 Land-Use Management

The DOE will restrict the use of land on waste sites and prohibit activities that would interfere with the remedial activity in accordance with the institutional controls requirements of the CERCLA decision documents and as described in applicable work plans. The DOE shall prohibit activities that would damage the monitoring systems and its components identified in the CERCLA decision documents. Such monitoring systems could include wells and systems monitoring engineered barrier performance.

Institutional controls that address land use have been grouped into the following two main elements:

- Land-use and real property controls, which are used to ensure that the use of land is in accordance with Hanford Site plans and CERCLA decision documents

- Excavation permits, which are required for excavations on the Site to prevent unplanned disturbance or infiltration as prohibited by CERCLA decision documents.

3.2.4.1 Land-Use and Real Property Controls

The objectives of the institutional controls related to land use and real property management are the following.

- Ensure that use of the land is compatible with any hazards that exist, and limit access to hazardous materials.

- Ensure that any changes in use of the land are adequately assessed before being allowed and thereby avoid unplanned or prohibited use.

- Ensure that controls associated with real estate are attached to the property record and otherwise ensure that the restrictions remain in place beyond RL ownership or management of the property.

The land-use management process and the real property management process are integrated and managed together. They comply with DOE P 430.1, *Land and Facility Use Planning*;

DOE P 580.1, *Management Policy for Planning, Programming, Budgeting, Operation Maintenance and Disposal of Real Property*; and DOE O 430.1B, *Real Property Asset Management*.

The land-use policies, real property management process, and implementing procedure requirements are integrated into the RL Integrated Management System and contractor procedures. The comprehensive land-use plan for the Site is presented in DOE/EIS-0222-F, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement*, and contains the land-use map, land-use definitions, and the land-use policies that the DOE uses to manage land use and its interactions with the local governments.

The DOE manages changes to land use and the use requests through a process involving the local stakeholders, Tribal Nations, and affected local governments. Chapter 6.0 of DOE/EIS-0222-F describes how the cooperating agencies with land-use authority, and affected Tribal governments, advise the DOE on land-use and resource-management issues such as considering proposals for changes to land use and land-use requests that are not in conformance with DOE/EIS-0222-F.

The review process for site-specific land use and use requests is defined in Chapter 6.0 of DOE/EIS-0222-F. To ensure compatibility with DOE/EIS-0222-F, any proposed changes in land use must be submitted to the DOE Real Estate Office.

The RL Site Realty Office reviews and approves the disposition of land. Before the transfer, sale, or lease of any property subject to cleanup under CERCLA is conducted, the DOE assesses whether the property is subject to institutional controls requirements based on the corresponding CERCLA decision documents. The DOE will notify the EPA and the state before any such transaction in accordance with the Sitewide institutional controls requirements and applicable requirements in the CERCLA decision documents and work plans. Notification of a land-use action or a real property action occurs in accordance with Tri-Party Agreement requirements.

The following is a summary of land-use management of the four NPL sites.

100 Area, 200 Area, and 300 Area National Priorities List Sites

Land use is managed according to the comprehensive land use plan as described in DOE/EIS-0222-F and in compliance with DOE Orders and cleanup end states as established in CERCLA decision documents.

Land use for the Hanford Reach National Monument is managed by the U.S. Fish and Wildlife Service, with the exception of areas where the DOE is conducting cleanup, in accordance with a memorandum of understanding (RL 2001).

A permit is required for excavation in the 100, 200, and 300 Areas and the Hanford Reach National Monument.

1100 Area Site (Deleted from National Priorities List in 1996)

Land use for the portion of land owned by the Port of Benton is managed under the jurisdiction of local governments through the implementation of state law.

Land-use management for the ALE, which is part of the Hanford Reach National Monument, is conducted by the U.S. Fish and Wildlife Service under a real estate permit and a memorandum of understanding (RL 2001).

The 1100 Area ROD (EPA/ROD/R10-93/063) requires that a notice be placed on the deed to this property that identifies this as an asbestos-containing landfill. In addition, the DOE will record a notation on the deed to the Horn Rapids Landfill property as specified in 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants."

3.2.4.2 Excavation Permits

The Hanford Site has a Sitewide excavation permit that contractors are required to obtain before performing any excavation work, including well drilling. An excavation permit is required for any mechanical digging or hand digging to a depth greater than 304.8 mm (12 in.).

The work control process requires an excavation permit as part of the work planning process. The excavation permit process contains the following features.

- A review of the *Waste Information Data System* (WIDS) database is required to identify the proximity of existing waste sites (more information regarding WIDS is provided in Section 3.2.6).
- Cultural and biological resource surveys are required to comply with Section 106 of the *National Historic Preservation Act of 1966* and the *Endangered Species Act of 1973*.
- *National Environmental Policy Act of 1969* documentation requirements must be identified.
- The presence of any underground objects (e.g., utilities) must be identified.
- Excavation work is required to follow the applicable health and safety requirements.
- The permit must undergo a review by several disciplines such as environmental, radiological, and safety before it is issued.
- Each prime contractor is responsible for ensuring that excavations are performed in accordance with excavation permit requirements.

3.2.5 Groundwater-Use Management

The DOE will restrict well drilling and groundwater use in accordance with the institutional controls requirements of the CERCLA decision documents and as described in applicable work plans. Groundwater use on the Hanford Site generally is restricted, except for limited research purposes and for monitoring and treatment, as approved by the EPA or Ecology or as authorized

in EPA- or Ecology-approved documents. Groundwater use also is controlled through excavation permits and the land-use process (as described previously).

A limited number of wells are in operation for purposes other than research or testing. These wells include those that supply drinking water at the following facilities:

- Fast Flux Test Facility in the 400 Area (one main and two backup wells)
- Hanford Patrol Training Center (one well)
- Yakima barricade (one well)
- Energy Northwest (formerly Washington Public Power Supply System) (two wells).

Other water-supply wells include two for backup fire protection at Energy Northwest and two at the B Plant, one at the AY/AZ Tank Farm for emergency cooling water, and one in the 300 Area being used for aquatic studies.

The drinking water systems are operated in accordance with the Washington State Department of Health *Washington Administrative Code*. All the new wells must be registered with Ecology. The control measures used to protect groundwater for drinking water systems are described in WASTREN 1995a, *Hanford Site Wellhead Protection Plan*. The control measures taken to protect the water that drains into the rivers on or near the Site and that also interacts with and affects the groundwater are described in WASTREN 1995b, *Hanford Site Watershed Control Plan*.

Oversight of the DOE water systems is the responsibility of RL, which must approve all uses. Groundwater management activities include ensuring compliance with applicable laws and regulations, implementing the groundwater protection and watershed control programs, identifying potential sources of contamination, conducting groundwater and vadose zone monitoring, conducting maintenance programs, and conducting emergency response actions.

Groundwater protection strategies include source control, remediation, and monitoring. The Hanford Site Groundwater Monitoring Project produces an annual report (not covered as part of this Plan) documenting the results of groundwater monitoring for the previous year. The Groundwater Monitoring Project report summarizes groundwater-monitoring results and provides an assessment of the effects of remediation or interim measures conducted under CERCLA. The report, along with OU-specific reports, fulfills the reporting requirements of DOE Orders and the *Washington Administrative Code*.

The results of the Groundwater Monitoring Project will be reviewed and reported annually to identify any trends regarding the condition of the groundwater and the potential implication of those trends to institutional controls (e.g., prohibition of groundwater use). The data from the report are considered in evaluating both the effectiveness of the institutional controls and the need for any changes to the controls.

In the event that the DOE transfers property with groundwater-use restrictions to another entity, the appropriate use restrictions will be attached to the real estate transaction to ensure that specific institutional controls will remain in place.

The following is a summary of groundwater-use management in the three NPL sites and the 1100 Area site:

- 100 Area, 200 Area, and 300 Area NPL sites
  - Groundwater use at the Hanford Site is restricted, except for monitoring and treatment, as approved by the EPA or Ecology.
- 1100 Area NPL Site (deleted from the NPL in 1996)
  - Groundwater use and drilling are prohibited on the Horn Rapids Landfill property and groundwater monitoring is conducted around the Horn Rapids Landfill to verify the modeled contaminant attenuation predictions and to evaluate the need for active remedial measures.

3.2.6 Waste Site Information Management

The DOE maintains a tracking mechanism that identifies all waste site land areas that are under restriction or control in accordance with the institutional controls requirements of the CERCLA decision documents and as described in applicable work plans.

The WIDS identifies waste management units on the Hanford Site, their location, waste type, status, and associated institutional controls.

Other descriptive information contained in WIDS includes size, extent, and appearance; testing or sampling efforts; regulatory information; bibliographic references; images; change history; and data validation. The DOE maintains the system in accordance with the WIDS change control system, which documents and traces additions, deletions, and/or other changes dealing with the status of waste management units. The long-term preservation of waste site information is addressed RL-TPA-90-0001, *Tri-Party Agreement Handbook Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," and it will be a key part of the Long-Term Stewardship Program.

The Administrative Record, which is the body of documents and information that is considered or relied on to arrive at a final decision for remedial action or hazardous waste management at a particular OU, is publicly available on the Internet at http://www2.hanford.gov/arpir/ . The documents in the Administrative Record include, but are not limited to, proposed plans for interim remedial action, remedial design reports, and RODs.

3.2.7 Miscellaneous Provision

The institutional controls listed in the CERCLA decision documents sometimes include requirements that are miscellaneous in nature (i.e., they do not clearly fit into any specific institutional controls category). Some examples are as follows.

- DOE shall notify EPA and Ecology of any trespassing incidents.
- DOE shall notify the Benton County Sherriff's office of any trespassing incidents.

- DOE shall evaluate the effectiveness of the institutional controls and report to EPA and Ecology.
- The DOE contractors will provide an annual update on the effectiveness of the institutional controls to EPA and Ecology at the Area Unit Managers Meetings every September.

3.3 FUTURE IMPLEMENTATION OF INSTITUTIONAL CONTROLS AT THE HANFORD SITE

The DOE anticipates that the Hanford Site will remain in Federal ownership in perpetuity. The DOE will be responsible for implementation and oversight of the institutional controls after cleanup is completed. The DOE plans to programmatically transition the institutional controls implementation and oversight responsibility for the Hanford Site from the DOE Office of Environmental Management to the DOE Office of Legacy Management in 2035. Legacy Management is responsible for implementing institutional controls as well as other stewardship responsibilities for DOE sites that have completed cleanup. The Hanford Site will have ongoing missions in the 200 Area and potentially the 300 Area.

Institutional Controls Following Cleanup

As discussed in Chapter 1.0, the institutional controls required following cleanup will be specified in final CERCLA decision documents for the respective OUs. These final decision documents for the most part are yet to be developed. The scope and duration of institutional controls will be based on an evaluation of residual contamination, the location of that material (e.g., at surface or at depth), reasonably anticipated future land and groundwater uses, and environmental impacts. Some interim action CERCLA decision documents (e.g., the 300-FF-2 Interim ROD [EPA/ROD/R10-01/119]) already specify institutional controls requirements that will be required after cleanup is complete. In general, if the end state of the selected remedy cannot support unrestricted human use and unlimited human exposure, institutional controls will be required to maintain human health and protection. The implementation and maintenance of such institutional controls will be conducted as described in this Plan and in accordance with the institutional controls requirements of the CERCLA decision documents and work plans. In the event that any of the Hanford Site land areas are transferred to an outside entity, the institutional controls that will remain in place on transfer of the land will be conveyed using the appropriate mechanism at the time of the transfer.

4.0 MANAGEMENT AND OVERSIGHT

This chapter describes the management and oversight of institutional controls, including the roles and responsibilities of the DOE and the regulators, how the effectiveness of institutional controls will be assessed and reported, and when this Plan will be updated.

4.1 KEY PARTIES AND THEIR ROLES

The DOE is the primary responsible party in implementing institutional controls at the Hanford Site. The lead regulatory agency approves and other regulatory agencies concur with the institutional controls requirements as a part of a selected remedy as defined in a CERCLA decision document. This section describes the roles of these key parties.

4.1.1 U.S. Department of Energy

The responsibility for implementing Sitewide institutional controls requirements resides with RL. The DOE, Office of River Protection does not have responsibility for CERCLA actions at this time. Any questions regarding institutional controls should be directed to RL. RL also is the interface with the regulatory agencies, including the EPA and Ecology, as well as the local governments. Table 4-1 lists the RL points of contact for institutional controls.

Table 4-1. U.S. Department of Energy, Richland Operations Office Institutional Controls Points of Contact.

Area	Points of Contacts	Areas of Responsibility
Sitewide	Assistant manager responsible for closure	Integrated planning of Sitewide institutional controls
100, 200, 300, and 1100 Areas	Assistant manager responsible for each individual NPL Site (i.e., 100, 200, 300, and 1100 Areas)	Implementing institutional controls in the NPL site and ensuring they remain reliable, enforced, and effective

NPL = National Priorities List.

As new CERCLA decision documents are issued and cleanup projects progress, institutional controls will be implemented as described in this Plan and in OU-specific remedial design report/remedial action work plans. Furthermore, the EPA, in some instances in consultation with Ecology, may require additional institutional controls on a site-specific basis if deemed necessary. Entities that are required to implement institutional controls will use this Plan's guidance as their basis to manage required controls.

RL can use several management tools, including, but not limited to, internal procedures, laws, regulations, DOE Orders, agreements, consent orders, *Federal Register* notices, informational announcements, and contracts to adhere to the institutional controls requirements specified in CERCLA decision documents and described in this Plan. In addition to meeting institutional controls and contractual obligations, contractors and employees are required to comply with

applicable environmental laws, DOE Orders, and administrative orders via contract requirements.

RL is responsible for the oversight and integration of these controls and for compliance.

As discussed in Chapter 1.0, RL executes work through the use of contractors. The contractors use corrective action management systems to identify, track, evaluate, document, and report any necessary corrective actions. The corrective action management systems provide a systematic process to ensure that corrective actions are taken for noted deficiencies.

RL is the lead agency for CERCLA 5-year reviews. The purpose of a 5-year review is to determine whether the remedy including institutional controls at a site is protective of human health and the environment. The 5-year review report also identifies deficiencies found during the review, if any, and identifies recommendations to address them.

4.1.2 Regulatory Agencies

The EPA and Ecology are the primary agencies that conduct oversight for RL cleanup activities at the Hanford Site as identified in the Tri-Party Agreement. Each OU is assigned a lead regulatory agency that has regulatory oversight responsibility with respect to actions under the Tri-Party Agreement regarding the particular OU. The EPA and Ecology have joint authority to determine the choice of lead regulatory agency (EPA or Ecology) and the regulatory process, in consultation with RL, for each OU.

EPA conducted the first 5-year review of the four NPL sites from February through September 2000. The results of the reviews that were conducted are contained in EPA 2001.

4.2 ASSESSMENT AND REPORTING

A focused and periodic self-assessment and reporting of institutional controls provides for an evaluation of the effectiveness of the controls and the opportunity for cost-effective improvements. This oversight activity includes the following activities:

- Assessing the performance of the institutional controls to ensure their effectiveness
- Identifying the need to adjust the institutional controls based on performance findings.

The RL contractors have the primary responsibility for these activities, with oversight from the DOE to ensure adequate implementation of assessments. Surveillance is the primary tool used to measure the day-to-day performance of the institutional controls. Each contractor has surveillance procedures that address the planning, performing, and reporting of surveillance, along with the activities required to address any noted deficiencies. Furthermore, RL conducts oversight and evaluation of contractor activities based on the corresponding procedures in the RL Integrated Management System.

Initially, the Sitewide institutional controls assessments were conducted on an annual basis. However, based on the results of the annual institutional controls assessments and the ongoing

review of institutional controls by individual projects, it has been determined that a Sitewide review of institutional controls is most appropriately conducted in conjunction with the Sitewide CERCLA 5-year review. The DOE will continue to conduct institutional controls assessments as required by the CERCLA decision documents. The ongoing review of the institutional controls by individual projects also will continue. The Sitewide institutional controls assessment, in conjunction with the CERCLA 5-year review, will be a "roll up" of these reviews and will serve as a means to evaluate effectiveness of the institutional controls. Based on the ongoing review, the contractors will provide an annual update on the effectiveness of the institutional controls to EPA and Ecology at the Area Unit Managers Meetings every September.

4.3 UPDATES TO THE SITEWIDE INSTITUTIONAL CONTROLS PLAN

Updates to this Plan will be managed by RL, EPA, and Ecology pursuant to the requirements established in the Tri-Party Agreement for primary documents. This Plan will be modified if the institutional controls requirements in the CERCLA decision documents change significantly as new decision documents are issued.

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5.0 REFERENCES

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

10 CFR 860, "Trespassing on Department of Energy Property," Title 10, *Code of Federal Regulations*, Part 860, as amended.

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

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

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List," Title 40, *Code of Federal Regulations*, Part 300, as amended.

63 FR 28317, "Notice of Intent to Delete Operable Units 100-IU-1 and 100-IU-3 of the Hanford 100 Area Superfund Site from the National Priorities List," *Federal Register*, Vol. 63, No. 99, p. 28317, May 22, 1998.

63 FR 36861, "Notice of Partial Deletion of the Hanford 100 Area (U.S. DOE) Superfund Site from the National Priorities List," *Federal Register*, Vol. 63, No. 130, pp. 36861-36862, July 8, 1998.

Atomic Energy Act of 1954, 42 USC 2011, et seq.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

DOE, 1996, *Superfund Final Closeout Report, U.S. Department of Energy 1100 Area*, U.S. Department of Energy, Washington, D.C.

DOE/EIS-0222-F, 1999, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement*, U.S. Department of Energy, Washington, D.C.

DOE O 430.1B, *Real Property Asset Management*, U.S. Department of Energy, Washington, D.C.

DOE O 470.1, *Safeguards and Security Program*, U.S. Department of Energy, Washington, D.C.

DOE P 430.1, *Land and Facility Use Planning*, U.S. Department of Energy, Washington, D.C.

DOE P 454.1, *Use of Institutional Controls*, U.S. Department of Energy, Washington, D.C.

DOE P 580.1, *Management Policy for Planning, Programming, Budgeting, Operation Maintenance and Disposal of Real Property*, U.S. Department of Energy, Washington, D.C.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington, as amended.

Endangered Species Act of 1973, 16 USC 1531, et seq.

EPA, 1999, *Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities*, Memorandum, U.S. Environmental Protection Agency, Office of Environmental Cleanup Region X, Region X Final Policy on the Use of Institutional Controls at Federal Facilities, Seattle, Washington.

EPA, 2001, *USDOE Hanford Site, First Five-Year Review Report*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA/ROD/R10-93/063, 1993, *Record of Decision for the USDOE Hanford 1100 Area Final Remedial Action*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA/ROD/R10-00/121, 2000, *Record of Decision for the USDOE Hanford 100-Area, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA/ROD/R10-01/119, 2001, *Record of Decision for the USDOE Hanford 300 Area, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

National Environmental Policy Act of 1969, 42 USC 4321, et seq.

National Historic Preservation Act of 1966, 16 USC 470, et seq.

RCW 70.105D, "Public Health and Safety," "Hazardous Waste Cleanup -- Model Toxics Control Act," Title 70, Chapter 105D, *Revised Code of Washington*, as amended, Washington State Department of Ecology, Olympia, Washington.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

RL, 2001, *First Amended Memorandum of Understanding Between the U.S. Department of the Interior, Fish and Wildlife Service and the U.S. Department of Energy, Richland Operations Office for the Operation of the Fitzner-Eberhardt Arid Lands Ecology Reserve at the Hanford Site; Fourth Amendment to the Wahluke Slope Permit*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, and U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., June 14.

RL-TPA-90-0001, 1998, *Tri-Party Agreement Handbook Management Procedures*, Guideline Number TPA-MP-14, "Maintenance of the Waste Information Data System (WIDS)," U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Superfund Amendments and Reauthorization Act of 1986, 42 USC 11001, et seq.

US EPA, 2005, *Record of Decision, 221-U Facility (Canyon Disposition Initiative), Hanford Site, Washington*. Available on the Internet at http://yosemite.epa.gov/R10/CLEANUP.NSF/9f3c21896330b4898825687b007a0f33/9193b1bfe7feb192882565920054de57/$FILE/cdiROD.pdf

WAC 173-340, "Model Toxics Control Act -- Cleanup," *Washington Administrative Code*, as amended.

Waste Information Data System Report, Hanford Site database.

WASTREN, 1995a, *Hanford Site Wellhead Protection Plan*, WASTREN, Inc., Richland, Washington.

WASTREN, 1995b, *Hanford Site Watershed Control Plan*, WASTREN, Inc., Richland, Washington.

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APPENDIX

INSTITUTIONAL CONTROLS REQUIRED BY EXISTING CERCLA DECISION DOCUMENTS

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APPENDIX

INSTITUTIONAL CONTROLS REQUIRED BY EXISTING CERCLA DECISION DOCUMENTS

This appendix provides a Sitewide list of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) decision documents that have institutional controls requirements. The decision documents and the operable units (OU) for which they are written are listed by National Priorities Listing (40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List") area, along with the institutional controls category, institutional controls requirements, and the corresponding section of the Plan where the institutional controls categories are addressed. Chapter A5.0 provides details for the references cited in the tables.

A1.0 INSTITUTIONAL CONTROLS REQUIRED BY EXISTING 100 AREA CERCLA DECISION DOCUMENTS

This section presents the institutional controls required by each of the 100 Area CERCLA decision documents. The decision documents for the 100 Area include several records of decision (ROD), explanation of significant differences from previously issued RODs for the specific operable unit, and the ROD amendments. The requirements are presented in Tables A1-1 through A1-13. The tables include the text of the individual institutional controls requirements contained in the decision documents.

Table A1-1. Institutional Controls Listed in Explanation of Significant Differences for the 100 Area Remaining Sites Interim Action Record of Decision for 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Miscellaneous Provision	Revised the reporting date for the annual institutional controls assessment report from March 30 to September 30. (NOTE: Subsequently, the annual reporting requirement was changed to occur as part of the CERCLA 5-year review effort, as discussed in Section 4.2 of this Plan. An update of the results of the annual institutional assessment results is to be provided to the U.S. Environmental Protection Agency and Washington State Department of Ecology at the Area Unit Managers Meetings every September.)	3.2

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980.*

Table A1-2. Institutional Controls Requirements Listed in EPA/ESD/R10-03/605, Explanation of Significant Differences for the 100-NR-1 Operable Unit Treatment, Storage, and Disposal Interim Action Record of Decision and 100-NR-1 and 100-NR-2 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Miscellaneous Provision	Revised the reporting date for the annual institutional controls assessment report from March 30 to September 30. (NOTE: Subsequently, the annual reporting requirement was changed to occur as part of the CERCLA 5-year review effort, as discussed in Section 4.2 of this Plan. An update of the results of the annual institutional controls assessment results is to be provided to the U.S. Environmental Protection Agency and Washington State Department of Ecology at the Area Unit Managers Meetings every September.)	3.2.7

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980.*

Table A1-3. Institutional Controls Requirements Listed in EPA/ESD/R10-03/606, Explanation of Significant Differences for 100-HR-3 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted this explanation of significant differences.	

Table A1-4. Institutional Controls Requirements Listed in EPA/ROD/R10-00/121, 100 Area Burial Ground Record of Decision (100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units). (4 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	100 Area Burial Ground Institutional Controls Requirements	
Entry Restrictions	DOE will continue to use a badging program to control access to the associated sites for the duration of the interim action. Visitors entering the sites associated with the Interim Action ROD are required to be escorted at all times.	3.2.3 3.2.3.1
Groundwater-Use Management	Well drilling is prohibited, except for monitoring or remediation wells authorized in EPA- and Ecology-approved or Ecology-approved documents. Groundwater use is prohibited, except for monitoring and treatment, as approved by EPA or Ecology.	3.2.5
Land-Use Management	No intrusive work is allowed on or near the waste sites covered in this ROD without prior approval of EPA or Ecology.	3.2.4 3.2.4.2
Warning Notices	DOE shall maintain signs that warn river users of potential hazards along the shoreline from 100 Area waste sites.	3.2.2
Warning Notices	DOE shall post and maintain in good condition "No Trespassing" signs along the 100 Area shoreline.	3.2.2
Warning Notices	DOE shall maintain signs along access roads that warn Site visitors and workers of potential hazards from 100 Area waste sites.	3.2.2
Miscellaneous Provision	DOE shall report trespass incidents to the Benton County Sheriff's Office for investigation and evaluation for possible prosecution.	3.7

Table A1-4. Institutional Controls Requirements Listed in EPA/ROD/R10-00/121, 100 Area Burial Ground Record of Decision (100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units). (4 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	Sitewide Institutional Controls Requirements	
Land-Use Management Groundwater-Use Management Waste Site Information Management Miscellaneous Provision	DOE shall submit a Sitewide institutional controls plan that includes the applicable institutional controls for the 100 Area operable units. This Sitewide plan will be submitted to EPA and Ecology for approval as a primary document under the Tri-Party Agreement by July 2001. This plan shall be updated by DOE periodically at the request of EPA or Ecology. At a minimum, the plan shall contain the following. • Include a comprehensive facility-wide list of all areas or locations covered by any and all decision documents at the Hanford Site that have or should have institutional controls for protection of human health or the environment. The information on the list will include, at a minimum, the location of the area, the objectives of the restriction or control, the time frame that the restrictions apply, and the tools and procedures DOE will use to implement the restrictions or controls and to evaluate the effectiveness of these restrictions or controls. • Cover, and legally bind where appropriate, all entities and persons, including, but not limited to, employees, contractors, lessees, agents, licensees, and visitors. In areas where DOE is aware of routine trespassing, trespassers also must be covered. • Cover all activities, and reasonably anticipated future activities, including, but not limited to, any future soil disturbances, routine and non-routine utility work, well placement and drilling, recreational activities, Hanford Reach National Monument-related uses, groundwater withdrawals, paving, construction, renovation work on structures, Tribal use, or other activities. • Include a tracking mechanism that identifies all land areas under restriction or control. • Include a process to promptly notify EPA and Ecology before any making anticipated change in land-use designation, restriction, land users, or activity for any institutional controls required by a decision document.	3.2.4 3.2.5 3.2.6 3.2.7

Table A1-4. Institutional Controls Requirements Listed in EPA/ROD/R10-00/121, 100 Area Burial Ground Record of Decision (100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units). (4 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management Miscellaneous Provision	DOE will notify EPA and Ecology immediately upon discovery of any activity that is inconsistent with the operable unit-specific institutional controls objectives for the Site, or of any change in the land use or land-use designation of a site. DOE will work together with EPA and Ecology to determine a plan of action to rectify the situation, except in the case where DOE believes the activity creates an emergency situation, DOE can respond to the emergency immediately upon notification to EPA and Ecology and need not wait for EPA or Ecology input to determine a plan of action. DOE also will identify deficiencies with the institutional controls process, evaluate how to correct the process to avoid future problems, and implement these changes after consulting with EPA and Ecology.	3.2.4 3.2.7
Miscellaneous Provision	DOE will identify a point of contact for implementing, maintaining, and monitoring institutional controls for the 100 Area, as well as for the Hanford Site.	3.2.7
Miscellaneous Provision	DOE will comply with Tri-Party Agreement requirements to request and obtain funding to institute and maintain institutional controls as a compliance requirement under the Tri-Party Agreement. NOTE: This is an existing Tri-Party requirement.	3.2.7
Land-Use Management	DOE will notify EPA and Ecology at least 6 months before any transfer, sale, or lease of any property subject to institutional controls required by a CERCLA decision document so that EPA and Ecology can be involved in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. If it is not possible for DOE to notify EPA and Ecology at least 6 months before any transfer, sale, or lease, then DOE will notify EPA and Ecology as soon as possible, but no later than 60 days before the transfer, sale, or lease of any property subject to institutional controls.	3.2.4
Miscellaneous Provision	DOE will not delete or terminate any institutional controls unless EPA and Ecology have concurred in the deletion or termination.	3.2.7

Table A1-4. Institutional Controls Requirements Listed in EPA/ROD/R10-00/121, 100 Area Burial Ground Record of Decision (100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units). (4 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Miscellaneous Provision	DOE will evaluate the implementation and effectiveness of institutional controls for the Hanford Site and the 100 Area operable units on an annual basis. The annual institutional controls monitoring report shall be written by DOE and submitted to EPA and Ecology as a primary document under the Tri-Party Agreement. The report shall be consistent with the requirements established in the Sitewide institutional controls plan. Justification will be provided for any information that is not included as required by the Sitewide plan. The annual monitoring report will be due on September 30 of each year and will summarize the results of the evaluation for the preceding calendar year. In addition, after the comprehensive Sitewide approach is well established and DOE has demonstrated its effectiveness, the frequency of future monitoring reports may be modified subject to approval by EPA and Ecology. The institutional controls monitoring report, at a minimum, must contain the following: • A description of how DOE is meeting the Sitewide institutional controls requirements • A description of how DOE is meeting the operable unit-specific objectives, including results of visual field inspections of all areas subject to operable unit-specific restrictions.	3.2.7
Miscellaneous Provision	The EPA and Ecology review of the institutional controls monitoring report will follow existing procedures for agency review of primary documents.	3.2.7

DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
EPA = U.S. Environmental Protection Agency.
ROD = record of decision.
Tri-Party Agreement = *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989).

Table A1-5. Institutional Controls Requirements Listed in EPA/ESD/R10-00/045, Explanation of Significant Differences for 100-IU-6.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted in this explanation of significant differences.	

Table A1-6. Institutional Controls Requirements Listed in EPA/ROD/R-10/120, Record of Decision (100-NR-1 Operable Unit).

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	DOE will continue to use a badging program to control access to the sites associated with this ROD for the duration of the interim action. Visitors entering any of the sites associated with the Interim Action ROD are required to be escorted at all times.	3.2.3 3.2.3.1
Land-Use Management	DOE will use the onsite excavation permit process to control land use (e.g., well drilling and excavation of soil) within the 100 Area operable units to prohibit any drilling or excavation except as approved by Ecology.	3.2.4 3.2.4.1
Warning Notices	DOE will maintain existing signs prohibiting public access.	3.2.2
Miscellaneous Provision	DOE will provide notification to Ecology upon discovery of any trespass incidents.	3.2.7
Miscellaneous Provision	Trespass incidents will be reported to the Benton County Sheriff's Office for investigation and evaluation for possible prosecution.	3.2.7
Land-Use Management	DOE will add access restriction language to any land transfer, sale, or lease of property that the U.S. Government considers appropriate while institutional controls are compulsory, and Ecology will have to approve any access restrictions before transfer, sale, or lease.	3.2.4.1
Miscellaneous Provision	Until final remedy selection, DOE shall not delete or terminate any institutional controls requirement established in this Interim Action ROD unless Ecology has provided written concurrence on the deletion or termination and appropriate documentation has been placed in the Administrative Record.	3.2.7
Miscellaneous Provision	DOE will evaluate the implementation and effectiveness of institutional controls for the 100-NR-1 Operable Units on an annual basis. DOE will submit a report to Ecology by July 31 of each year summarizing the results of the evaluation for the preceding calendar year. At a minimum, the report shall contain an evaluation of whether or not the institutional controls requirements continue to be met and a description of any deficiencies discovered and measures taken to correct problems.	3.2.7

DOE = U.S. Department of Energy.
ROD = record of decision.
Ecology = Washington State Department of Ecology.

Table A1-7. Institutional Controls Requirements Listed in EPA/AMD/R10-00/122, Record of Decision Amendment for 100-HR-3 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	Institutional controls for protection of human health required by EPA/ROD/R10-96/134 are unchanged.	

EPA/ROD/R10-96/134, *Record of Decision for the USDOE Hanford 100-Area, Benton County, Washington.*

Table A1-8. Institutional Controls Requirements Listed in EPA/ROD/R10-99/112, Record of Decision for 100-NR-1 and 100-NR-2 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	DOE will continue to use a badging program to control access to the sites associated with this ROD for the duration of the interim action. Visitors entering the sites associated with the Interim Action ROD are required to be escorted at all times.	3.2.3 3.2.3.1
Land-Use Management	DOE will use the onsite excavation permit process to control well drilling and excavation of soil within the 100 Area operable units to prohibit any drilling or excavation except as approved by Ecology.	3.2.4 3.2.4 2
Warning Notices	DOE will maintain existing signs prohibiting public access.	3.2.2
Miscellaneous Provision	DOE will provide notification to Ecology upon discovery of any trespass incidents.	3.2.7
Miscellaneous Provision	Trespass incidents will be reported to the Benton County Sheriff's Office for investigation and evaluation for possible prosecution.	3.2.7
Land-Use Management	DOE will add access restriction language to any land transfer, sale, or lease of property that the U.S. Government considers appropriate while institutional controls are compulsory, and Ecology will have to approve any access restrictions before transfer, sale, or lease.	3.2.4 3.2.4.1
Miscellaneous Provision	Until final remedy selection, DOE shall not delete or terminate any institutional controls requirement established in this Interim Action ROD unless Ecology has provided written concurrence on the deletion or termination and appropriate documentation has been placed in the Administrative Record.	3.2.7
Miscellaneous Provision	DOE will evaluate the implementation and effectiveness of institutional controls for the 100-NR-1 and 100-NR-2 operable units on an annual basis. DOE shall submit a report to Ecology by July 31 of each year summarizing the results of the evaluation for the preceding calendar year. At a minimum, the report shall contain an evaluation of whether or not the institutional controls requirements continue to be met and a description of any deficiencies discovered and measures taken to correct problems.	3.2.7

DOE = U.S. Department of Energy.
ROD = record of decision.
Ecology = Washington State Department of Ecology.

Table A1-9. Institutional Controls Requirements Listed in EPA/ROD/R10-99/059, Record of Decision for 100-KR-2 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	The U.S. Department of Energy will maintain or implement access restrictions to prevent public access until final remedial action is completed.	3.2.2 3.2.3
Entry Restrictions	Current access controls include signs along the river, and 2.4 m (8-ft) fence, locked access to buildings containing the primary hazards, and routine patrols. Institutional controls will be included in the remedial design report/remedial action work plan subject to U.S. Environmental Protection Agency approval.	3.2.2 3.2.3

Table A1-10. Institutional Controls Requirements Listed in EPA/AMD/R10-97/044, Record of Decision Amendment for 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	Use of institutional controls is mentioned in the record of decision, but the selected remedy does not specify institutional controls.	

Table A1-11. Institutional Controls Requirements Listed in EPA/ROD/R10-96/134, Record of Decision for 100-HR-3 and 100-KR-4 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions Land-Use Management	Institutional controls are required to prevent human exposure to groundwater. DOE is responsible for establishing and maintaining land-use and access restrictions until maximum contaminant levels and risk-based criteria are met or the final remedy is selected. Institutional controls include placing written notification of the remedial action in the facility land-use master plan. DOE will prohibit any activities that would interfere with the remedial activity without EPA and Ecology concurrence. In addition, measures necessary to ensure the continuation of these restrictions will be taken in the event of any transfer or lease of the property before a final remedy is selected. A copy of the notification will be given to any prospective purchaser/transferee before any transfer or lease. DOE will provide EPA and Ecology with written verification that these restrictions have been put in place.	3.2.3 3.2.4 3.2.4.1

DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
Ecology = Washington State Department of Ecology.

Table A1-12. Institutional Controls Requirements Listed in EPA/ROD/R10-96/151, Record of Decision for 100-IU-1, 100-IU-3, 100-4, and 100-IU-5 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	This record of decision does not list institutional controls requirements.	

Table A1-13. Institutional Controls Requirements Listed in EPA/ROD/R10-95/126, Record of Decision for 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions Land-Use Management Groundwater-Use Management	The U.S. Department of Energy will control access and use of the Site for the duration of the cleanup, including restrictions on the drilling of new groundwater wells in the existing plumes or their paths. It is expected that institutional controls will be enforced until the remedial action objectives have been attained.	3.2.3 3.2.3.1 3.2.4 3.2.5

A2.0 INSTITUTIONAL CONTROLS REQUIRED BY EXISTING 200 AREA CERCLA DECISION DOCUMENTS

This section presents the institutional controls required by each of the 200 Area CERCLA decision documents. The requirements are presented in Tables A2-1 through A2-9. The tables include the text of the individual institutional controls requirements contained in the decision documents.

For the 221-U Plant Facility, a process for implementing the project-specific institutional controls applicable during remediation will be found in the remediation action work plan or the surveillance and maintenance plan. A process for implementing the project-specific institutional controls applicable after remediation is complete at the 221-U Plant Facility will be found in the project operation and maintenance manual.

Table A2-1. Institutional Controls Requirements (Required Through the time of Completion of Remedy Construction) Listed in Record of Decision for 221-U Facility (Canyon Disposition Initiative). (2 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	DOE shall control access to prevent unacceptable exposure of humans to contaminants at the 221-U Facility site addressed in the scope of this ROD until remedy construction is complete. Visitors entering any site areas are required to be badged and escorted at all times. See Figure 7 of the 221-U Facility ROD (US EPA 2005) for a site map showing the extent of the 221-U Facility site and the boundaries of the land-use controls. A more detailed map will be developed and included in the RD/RA work plan to be approved by EPA and Ecology.	3.2.2.2 3.2.3
Land-Use Management	No intrusive work shall be allowed at the 221-U Facility site unless the EPA and Ecology have approved the plan for such work and that plan is followed.	3.2.4 3.2.4.2
Land-Use Management	DOE shall prohibit well drilling at the 221-U Facility site except for monitoring, characterization, or remediation wells authorized in EPA- and Ecology-approved documents.	3.2.4 3.2.4.2
Groundwater-Use Management	Groundwater use at the 221-U Facility site is prohibited, except for limited research purposes and monitoring and treatment authorized in EPA- and Ecology-approved documents. This prohibition applies until drinking water standards are achieved and EPA and Ecology authorize removal of restrictions. Decision documents for the 200-UW-1 Source Operable Unit and 200-UP-1 Groundwater Operable Unit as well as the Sitewide institutional controls plan will contain the institutional controls and implementing details prohibiting well drilling and groundwater use in the U Plant Area and portions of the 200 West Area as defined in those decision documents.	3.2.5

Table A2-1. Institutional Controls Requirements (Required Through the time of Completion of Remedy Construction) Listed in Record of Decision for 221-U Facility (Canyon Disposition Initiative). (2 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Warning Notices	DOE shall post and maintain warning signs along access roads to caution site visitors and workers of potential hazards from the 221-U Facility site.	3.2.2
Miscellaneous Provision	In the event of any unauthorized access to the site, such as trespass, DOE shall report such incidents to the Benton County Sheriff's Office for investigation and evaluation of possible prosecution.	3.2.7

DOE = U.S. Department of Energy.
ROD = record of decision.
Ecology = Washington State Department of Ecology.
EPA = U.S. Environmental Protection Agency.

Table A2-2. Institutional Controls (Required After Construction of the Remedial Action) Listed in Record of Decision for 221-U Facility (Canyon Disposition Initiative). (3 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	DOE shall ensure that use of the 221-U Facility site as well as any activities at the site are restricted to industrial use only, consistent with the exposure assumptions used in establishing risk-based cleanup levels for radionuclides and the use of MTCA Method C (WAC 173-340-706) to calculate industrial cleanup levels for chemicals. A surveillance program shall be maintained to document that risk- and ARAR-based cleanup levels (and the exposure durations upon which they are based) are not exceeded. Furthermore, DOE shall prohibit the development and use of the 221-U Facility site for residential housing, elementary and secondary schools, childcare facilities, and playgrounds. These restrictions shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4
Land-Use Management	Activities that would disrupt or lessen the performance of the engineered surface barrier are to be prohibited. The engineered surface barrier is anticipated to cover the area delineated in Figure 6 of the 221-U Facility ROD (US EPA 2005). These restrictions shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4 3.2.4.1 3.2.4.2

Table A2-2. Institutional Controls (Required After Construction of the Remedial Action) Listed in Record of Decision for 221-U Facility (Canyon Disposition Initiative). (3 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	DOE shall maintain an effective vegetative soil layer to promote the succession of native plants as a feature of the evapotranspiration surface barrier and prohibit activities that would lessen the effectiveness of the vegetation, barrier, and run on/run off controls. These infiltration control measures shall be maintained unless (or until) DOE can demonstrate that the proposed activity or change in maintenance will result in no negative impact on groundwater or river water quality from any potential release of contamination from the site and EPA and Ecology approve the change.	3.2.4 3.2.4.1 3.2.4.2
Land-Use Management	No irrigation will be permitted for agriculture or landscaping on the 221-U Facility site. This infiltration restriction shall be maintained unless (or until) DOE can demonstrate that the proposed irrigation will have no negative impact on groundwater or river water quality from any potential release of contamination from the site and EPA and Ecology approve the change.	3.2.4 3.2.4.1 3.2.4.2
Land-Use Management	No intrusive work shall be allowed at the 221-U Facility site unless the EPA and Ecology have approved the plan for such work and that plan is followed. This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4 3.2.4.2
Land-Use Management	DOE shall prohibit well drilling at the 221-U Facility site except for monitoring, characterization, or remediation wells authorized in EPA- and Ecology-approved documents. This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4 3.2.4.2
Groundwater-Use Management	Groundwater use is prohibited at the 221-U Facility site, except for limited research purposes and monitoring and treatment authorized in EPA- and/or Ecology-approved documents. This prohibition applies until contaminant concentrations in the groundwater are at or below drinking water restrictions and EPA and Ecology authorize removal of restrictions. Decision documents for the 200-UW-1 Source Operable Unit and 200-UP-1 Groundwater Operable Unit as well as the Sitewide institutional controls plan will contain the institutional controls and implementing details prohibiting well drilling and groundwater use in the U Plant Area and portions of the 200 West Area as defined in those decision documents.	3.2.5

Table A2-2. Institutional Controls (Required After Construction of the Remedial Action) Listed in Record of Decision for 221-U Facility (Canyon Disposition Initiative). (3 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	DOE shall prohibit activities that would damage the monitoring system and its components (e.g., monitoring wells). This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4 3.2.4.1 3.2.4.2
Waste Site Information management	DOE shall establish and maintain a records system or database that tracks locations and estimated quantities of residual contamination left in place. This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.6
Land-Use Management	DOE shall report the location of residual contamination in deed notices and other informational devices. In addition, a copy of any material documenting the location and quantity of residual contamination shall be given to any prospective purchaser/transferee before any transfer or lease. Measures that are necessary to ensure the continuation of land-use restrictions or other institutional controls (e.g., proprietary controls such as property easements or covenants) shall be taken before any transfer or lease of the property. DOE shall notify EPA and Ecology at least 6 months before any transfer, sale, or lease of any property subject to institutional controls required by a CERCLA decision document so that EPA and Ecology can be involved in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. If it is not possible for DOE to notify EPA and Ecology at least 6 months before any transfer, sale, or lease, then DOE will notify EPA and Ecology as soon as possible, but no later than 60 days before the transfer, sale, or lease of any property subject to institutional controls. This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.4
Miscellaneous Provision	DOE shall report on the effectiveness of institutional controls for this remedy in an annual report, or on an alternative reporting frequency specified by EPA and Ecology. Such reporting may be for this site alone or may be part of a Hanford Sitewide report. This restriction shall be maintained until the concentrations of hazardous substances in the soil and groundwater are at such levels to allow for unrestricted use and exposure.	3.2.7

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980.*
DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
EPA = U.S. Environmental Protection Agency.

Table A2-3. Institutional Requirements Listed in EPA/AMD/R10-02/030, Record of Decision Amendment for Environmental Restoration Disposal Facility.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	Institutional controls shall be imposed to restrict public access to the landfill.	3.2.3

Table A2-4. Institutional Requirements Listed in EPA/ROD/R10-99/039, Record of Decision for 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 10-KR-1, 100-KR-2, I00-IU-2, 100-IU-6, and 200-CW-3 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	DOE will continue to use a badging program to control access to the associated sites for the duration of the interim action. Visitors entering the sites associated with the Interim Action ROD are required to be escorted at all times.	3.2.3 3.2.3.1
Land-Use Management	DOE will use the onsite excavation permit process to control land use (e.g., well drilling or excavation of soil) within the 100 Area operable units.	3.2.4 3.2.4.2
Warning Notices	DOE will maintain existing signs prohibiting public access.	3.2.2
Miscellaneous Provision	DOE will provide notification to EPA and Ecology upon discovery of any trespass incidents.	3.2.7
Miscellaneous Provision	Trespass incidents will be reported to the Benton County Sheriff's Office for investigation and evaluation for possible prosecution.	3.2.7
Land-Use Management	DOE will add access restriction language to any land transfer, sale, or lease of property that the U.S. Government considers appropriate while institutional controls are compulsory.	3.2.4 3.2.4.1
Miscellaneous Provision	Until final remedy selection, DOE shall not delete or terminate any institutional controls requirement established in this Interim Action ROD unless EPA and Ecology have provided written concurrence on the deletion or termination and appropriate documentation has been placed in the Administrative Record.	3.2.7
Miscellaneous Provision	DOE will evaluate the implementation and effectiveness of institutional controls for the 100 Area operable units on an annual basis. DOE shall submit a report to EPA and Ecology by March 30 of each year summarizing the results of the evaluation for the preceding calendar year. At a minimum, the report shall contain an evaluation of whether or not the institutional controls requirements continue to be met and a description of any deficiencies discovered and measures taken to correct problems.	3.2.7

DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
EPA = U.S. Environmental Protection Agency.

Table A2-5. Institutional Controls requirements Listed in EPA/AMD/R10-99/038, Record of Decision Amendment for Environmental Restoration Disposal Facility.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted in this amendment.	

Table A2-6. Institutional Controls Requirements Listed in EPA/AMD/R10-97/101, Record of Decision Amendment for Environmental Restoration Disposal Facility.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted in this amendment.	

Table A2-7. Institutional Controls Requirements Listed in EPA/ROD/R10-97/048, Record of Decision 200-UP-1 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management Entry Restrictions	Institutional controls are required to prevent human exposure to groundwater. DOE is responsible for establishing and maintaining land-use and access restrictions until the final remedy is selected and implemented.	3.2.4 3.2.4.1 3.2.4.2 3.2.3 3.2.3.1 3.2.2
Miscellaneous Provision	Institutional controls include placing written notification of the remedial action in the facility land-use master plan.	3.2.7
Land-Use management	DOE will prohibit any activities that would interfere with the remedial activity without the lead agency's concurrence.	3.2.4
Land-Use Management	In addition, measures necessary to ensure the continuation of this restriction will be taken in the event of any transfer or lease of the property before the final remedy is selected. A copy of the notification in a land-use plan will be given to any prospective purchaser/transfer before any transfer or lease. DOE will provide the Washington State Department of Ecology and U.S. Environmental Protection Agency within written verification that these restrictions have been put in place.	3.2.4 3.2.4.1

DOE = U.S. Department of Energy.

Table A2-8. Institutional Controls Requirements Listed in EPA/ROD/R10-95/114, Record of Decision for 200-ZP-1 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	This record of decision does not list institutional controls requirements	

Table A2-9. Institutional Controls Requirements Listed in EPA/ROD/R10-95/100, Record of Decision for Environmental Restoration Disposal Facility.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	Institutional controls shall be imposed to restrict public access to the landfill.	3.2.3

A3.0 INSTITUTIONAL CONTROLS REQUIRED BY EXISTING 300 AREA CERCLA DECISION DOCUMENTS

This section presents the institutional controls required by each of the 300 Area CERCLA decision documents. The decision documents for the 300 Area include several RODs, as well as an explanation of significant difference from a previously issued ROD. The requirements are presented in Tables A3-1 through A3-6. The tables include the text of the individual institutional controls requirements contained in the decision documents.

Table A3-1. Institutional Controls Requirements Listed in 300 Area Explanation of Significant Differences for the 300-FF-2 Operable Unit Record of Decision.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	Implement institutional controls to ensure that unanticipated changes in land use do not occur that could result in unacceptable exposures to residual contamination.	3.2.4 3.2.4.1
Miscellaneous Provision	The 300-FF-2 ROD identifies institutional control requirements. As a result of changing cleanup levels for the eight waste sites from industrial to unrestricted, one of the institutional controls requirements will no longer apply to these eight sites. This requirement is listed in the 300-FF-2 ROD section titled, "Institutional Controls Required After Cleanup Is Complete." Specifically, institutional control number 1, listed on page 57 of the 300-FF-2 ROD, would not apply to these eight waste sites.	3.2.7

ROD = record of decision.

Table A3-2. Institutional Controls Requirements (Required at Current Time and During Cleanup Activity) Listed in EPA/ROD/R10-01/119, Record of Decision for 300-FF-2 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	Operable Unit Institutional Controls Requirements	
Entry Restrictions	DOE shall control access to the waste sites addressed in the scope of this ROD until cleanup is complete. Visitors entering any uncovered waste site areas are required to be escorted at all times.	3.2.3 3.2.3.1
Land-Use Management Groundwater-Use Management	DOE shall prohibit well drilling in any waste site areas, except for monitoring or remediation wells authorized in EPA-approved documents. Groundwater use is prohibited, except for limited research purposes and for monitoring and treatment authorized in EPA-approved documents. These restrictions apply until groundwater cleanup objectives (as established in this ROD) have been achieved.	3.2.4 3.2.4.2 3.2.5
Land-Use Management	DOE shall control all intrusive work in any waste site areas addressed by this ROD.	3.2.4 3.2.4.1
Warning Notices	DOE shall post and maintain warning signs along the Columbia River shoreline to caution river users of potential hazards from 300 Area waste sites and spring discharges.	3.2.2
Warning Notices	DOE shall post and maintain warning signs along access roads to caution Site visitors and workers of potential hazards from 300 Area waste sites.	3.2.2
Miscellaneous Provision	DOE shall report trespass incidents to the Benton County Sheriff's Office for investigation and evaluation of possible prosecution.	3.2.7
	Sitewide Institutional Controls Requirements	
Miscellaneous Provision	A plan for implementing these requirements shall be submitted by DOE in a Sitewide institutional controls plan as required by EPA/ROD/R10-00/121. Pursuant to EPA/ROD/R10-00/121, the Sitewide implementation plan must be submitted to EPA and Ecology as a primary document under the Tri-Party Agreement by July 2001.	Entire Plan (see Table A1-1)

EPA/ROD/R10-00/121, *Record of Decision for the USDOE Hanford 100-Area, Benton County, Washington.*

DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
EPA = U.S. Environmental Protection Agency.
ROD = record of decision.
Tri-Party Agreement = *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989).

Table A3-3. Institutional Controls Requirements (Required After Cleanup is Complete) Listed in EPA/ROD/R10-01/119, Record of Decision for 300-FF-2 Operable Unit. (2 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	DOE shall ensure that former waste site locations are restricted to industrial use only, consistent with the exposure assumptions used in establishing risk-based cleanup levels for radionuclides and the use of WAC 173-340-706 industrial cleanup levels for chemicals. DOE will maintain a surveillance program to document that risk or applicable or relevant and appropriate requirement-based cleanup levels (and the exposure durations upon which they are based) are not exceeded. This will not be required if remediation work results in soil concentrations that would permit unrestricted use and unlimited exposure.	3.2.4 3.2.4.1
Groundwater-Use Management	DOE shall prevent the use of groundwater as a drinking water source as long as contaminant concentrations are above drinking water levels.	3.2.5
Land-Use Management	DOE shall limit access to and use of the water from seeps and springs along the Columbia River shoreline as long as concentrations in the discharge water exceed drinking water standards.	3.2.4 3.2.4.1
Groundwater-Use Management Land-Use Management	DOE shall maintain groundwater and Columbia River protection standards including the following. a) Infiltration controls (e.g., revegetation, asphalt, concrete) must be maintained as part of this remedy or remedial action goals/soil cleanup levels must be reevaluated and modified using different evapotranspiration coefficients (i.e., gravel does not prevent infiltration through residual contamination) pursuant to procedures established in the EPA-approved remedial design report/remedial action work plan. b) No irrigation will be permitted for agriculture or landscaping on former waste site locations. c) These infiltration control measures and irrigation restrictions shall be maintained unless (or until) it can be demonstrated that there will be no negative impact on groundwater or river water quality from residual contamination at former waste site locations.	3.2.4 3.2.4.1 3.2.5
Land-Use Management	DOE shall control the removal of soil or debris from former waste site locations in the 300 Area National Priorities List (40 CFR 300, Appendix B) site. Soil or debris from former waste site locations can only be removed for other uses if concentrations meet cleanup levels that are based on an unrestricted use exposure scenario. Additional soil or debris can be removed from former waste site locations if they are being sent to a disposal facility approved in advance by EPA.	3.2.4 3.2.4.1

Table A3-3. Institutional Controls Requirements (Required After Cleanup is Complete) Listed in EPA/ROD/R10-01/119, Record of Decision for 300-FF-2 Operable Unit. (2 Pages)

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Land-Use Management	DOE shall limit the removal of soil or debris from former waste site locations where contaminated soils and/or debris remain at depth (i.e., below 4.6 m [15 ft]) above direct contact/direct exposure cleanup levels. Any material left at depth above these standards can only be removed from the former waste site location if it is being sent to a disposal facility approved in advance by EPA.	3.2.4 3.2.4.1
Waste Site Information Management	DOE shall establish and maintain a records system or database that tracks locations and estimated quantities of residual contamination left in place at waste sites that would preclude unlimited use or unrestricted exposure.	3.2.6
Land-Use Management	DOE shall report the location of residual contamination in deed notices and other informational devices (e.g., a copy of any material documenting the location and quantity of residual contamination will be given to any prospective purchaser/transferee before any transfer or lease). Measures that are necessary to ensure the continuation of land-use restrictions or other institutional controls (e.g., proprietary controls such as property easements or covenants) will be taken before any transfer or lease of the property.	3.2.4

DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.

Table A3-4. Institutional Controls Requirements Listed in EPA/ESD/R10-00/524, Explanation of Significant Differences for 300-FF-5 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Groundwater-Use Management	Institutional controls preventing use of the 300 Area groundwater will remain in place.	3.2.5

Table A3-5. Institutional Controls Requirements Listed in EPA/ESD/R10-00/505, Explanation of Significant Differences for 300-FF-1 Operable Unit.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted in this explanation of significant differences.	

Table A3-6. Institutional Controls Requirements Listed in EPA/ROD/R10-96/143, Record of Decision for 300-FF-1 and 300-FF-5 Operable Units.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Groundwater-Use Management	Institutional controls are required to prevent human exposure to groundwater and to ensure that unanticipated changes in land use do not occur that could result in unacceptable exposure to residual contamination. DOE is responsible for establishing and maintaining land-use and access restrictions until cleanup criteria are met.	3.2.5
Warning Notices	Institutional controls include placing written notification of the remedial action in the facility land-use master plan.	3.2.2
Land-Use Management	DOE will prohibit any activities that would interfere with the remedial activity without EPA concurrence.	3.2.4
Land-Use Management	In addition, measures acceptable to EPA that are necessary to ensure the continuation of these restrictions will be taken before any transfer or lease of the property. A copy of the notification will be given to any prospective purchaser/transferee before any transfer or lease. DOE will provide EPA with written verification that these restrictions have been put in place.	3.2.4 3.2.4.1

DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.

A4.0 INSTITUTIONAL CONTROLS REQUIRED BY EXISTING 1100 AREA CERCLA DECISION DOCUMENTS

This section presents the institutional controls required by EPA/ROD/R10-93/063, *Record of Decision for the USDOE Hanford 1100 Area Final Remedial Action* and DOE 1996, *Superfund Final Closeout Report, U.S. Department of Energy 1100 Area* (the 1100 Area was deleted from the National Priorities List in 1996). The requirements are presented in Tables A4-1, A4-2, and A4-3. The tables include the text of the individual institutional controls requirements contained in these documents.

Table A4-1. Institutional Controls Requirements Listed in the Superfund Final Closeout Report, U.S. Department of Energy 1100 Area, July 25, 1996.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	Plans are in place for DOE to inspect and maintain the integrity of the cap and fencing at the Horn Rapids Landfill.	3.2.3 3.2.3.1
Groundwater-Use Management	Continued groundwater monitoring around the Horn Rapids Landfill is necessary to verify the modeled contaminant attenuation predictions and to evaluate the need for active remedial measures.	3.2.5

DOE = U.S. Department of Energy.

Table A4-2. Institutional Controls Requirements Listed in EPA/ESD/R10-96/145, Explanation of Significant Differences Environmental Restoration Disposal Facility.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
	No institutional controls requirements were added, modified, or deleted this explanation of significant differences.	

Table A4-3. Institutional Controls Requirements Listed in EPA/ROD/R10-93/063, Record of Decision for the USDOE Hanford 1100 Area Final Remedial Action for 1100-EM-1, 1100-EM-2, 1100-EM-3, and 1100-IU-1.

Institutional Controls Category	Institutional Controls Requirement	Section of the Plan where Institutional Controls are Addressed
Entry Restrictions	DOE will control access and use of the Site for the duration of the cleanup, including restrictions on the drilling of new groundwater wells in the plume or its path will be enforced until the remedial action objectives have been attained.	3.2.3 3.2.3.1
Land-Use Management	DOE will record a notation on the deed to the Horn Rapids Landfill property as specified in the asbestos NESHAP.	3.2.4 3.2.4.1

DOE = U.S. Department of Energy.
NESHAP = 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants."

A5.0 REFERENCES

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

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List," Title 40, *Code of Federal Regulations*, Part 300, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

DOE, 1996, *Superfund Final Closeout Report, U.S. Department of Energy 1100 Area*, U.S. Department of Energy, Washington, D.C.

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