

**EXPLANATION OF SIGNIFICANT DIFFERENCES
FOR THE 100-HR-3 AND 100-KR-4 OPERABLE UNIT
INTERIM ACTION RECORD OF DECISION**

**Hanford Site
Benton County, Washington**

EPA ID: WA 1890090078

June 2019

SITE NAME AND LOCATION

U.S. Department of Energy
100-HR-3 and 100-KR-4 Groundwater Operable Unit
Hanford Site – 100 Area
Benton County, Washington

INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

This decision document presents an explanation of significant differences (ESD) for EPA/ROD/R10-96/134, *Record of Decision for the 100-HR-3 and 100-KR-4 Operable Units Interim Remedial Actions, Hanford Site, Benton County, Washington* (hereinafter referred to as the 100-HR-3 and 100-KR-4 OU Interim Action Record of Decision [ROD]). On July 30, 2018 a final action ROD was issued for the 100-HR-3 OU and as a result, this ESD only applies to the scope associated with the 100-KR-4 OU. The U.S. Department of Energy (DOE) 100 Area National Priorities List (40 CFR 300, “National Oil and Hazardous Substances Pollution Contingency Plan” [hereinafter referred to as the National Contingency Plan (NCP)], Appendix B, “National Priorities List”) site is located in Benton County, Washington.

The 100 Area of the Hanford Site, which encompasses approximately 68 km² (26 mi²) bordering the southern shore of the Columbia River, is the site of nine retired plutonium-production reactors. The groundwater impacted by operations associated with the nine reactor areas has been divided into five groundwater operable units (OUs). Two of the five groundwater OUs (100-HR-3 and 100-KR-4) were addressed in the Interim Action ROD (EPA/ROD/R10-96/134).

The 100-KR-4 Groundwater OU interim remedial action is being conducted under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*. The 100-HR-3 and 100-KR-4 OU Interim Action ROD (EPA/ROD/R10-96/134), as amended (EPA/AMD/R10-00/122, *Interim Remedial Action Record of Decision Amendment for the 100-HR-3 Operable Unit, Hanford Site, Benton County, Washington*), selected the interim remedy of groundwater pump and treat (P&T) to intercept the hexavalent chromium plume under the 100-K Areas and then treatment using an ion-exchange technology. Under the Interim Action ROD, groundwater is to be extracted from wells primarily located along the Columbia River in each of the three reactor areas.

The following conclusions form the bases for the decisions provided in this ESD:

- Implementation of the remedy includes routine maintenance and sampling activities for groundwater wells associated with the 100-KR-4 OU, including P&T operations. These activities, including characterization and monitoring, well maintenance, well decommissioning, and water table level measurements, generate small amounts of miscellaneous solid waste that are stored for eventual disposal.
- The miscellaneous solid waste generated in support of the 100-KR-4 interim actions is physically similar to miscellaneous solid waste generated from other Hanford Site groundwater OUs. A centralized location in the Central Plateau for storing and managing solid waste from these Hanford Site groundwater OUs has been proposed to facilitate the safe and efficient storage of the solid waste prior to disposal. Solid waste from each groundwater OU will be segregated and not commingled.

DOE is the lead agency and the U.S. Environmental Protection Agency (EPA) is the lead regulatory agency for the 100-KR-4 OU as described in EPA et al., 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*. These two agencies are issuing this ESD to provide public notice regarding significant changes to the 100-HR-3 and 100-KR-4 OU Interim Action ROD (EPA/ROD/R10-96/134).

STATUTORY CITATION FOR AN EXPLANATION OF SIGNIFICANT DIFFERENCES

The Tri-Parties are issuing this ESD in accordance with CERCLA Section 117(c), “Public Participation,” and the NCP (40 CFR 300.435(c)(2)(i), “Remedial Design/Remedial Action, Operation and Maintenance”). The purpose of this ESD is to provide public notice regarding a change to the selected interim remedial action that will allow for more efficient and cost-effective management of miscellaneous solid waste generated during routine 100-KR-4 OU groundwater remedial activities using a centralized solid waste storage area in the Central Plateau. All waste management activities associated with centralized waste management storage will be completed pursuant to the requirements set forth in DOE/RL-2013-33, *Remedial Design/Remedial Action Work Plan for the 100-KR-4 Groundwater Operable Unit Interim Action* and DOE/RL-97-01, *Interim Action Waste Management Plan for the 100-HR-3 and 100-KR-4 Operable Units*.

In accordance with the NCP (40 CFR 300.435(c)(2)(i)(A); 40 CFR 300.825(a)(2), “Record Requirements After the Decision Document Is Signed”), this ESD and its supporting documents will become part of the 100-KR-4 OU Interim Action Administrative Record. The ESD and supporting information are available at the DOE Tri-Party Agreement (Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order*) Administrative Record office and public information repositories available at <http://pdw.hanford.gov/arpir/> and the following locations:

U.S. Department of Energy, Richland Operations Office

Administrative Record and Public Access Room

2440 Stevens Center, Room 1101

P.O. Box 950, Mail Stop H6-08

Richland, WA 99352

(509) 376-2530

Email: Heather_M_Childers@rl.gov

Hours of operation: Monday through Thursday, 6:00 a.m. to 4:30 p.m. (except 12:00 to 1:00 p.m.)

Gonzaga University

Foley Center Library

East 502 Boone Avenue

Spokane, WA 99258

(509) 313-6110

Email: spenceratkins@gonzaga.edu

SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The 100-HR-3 and 100-KR-4 OU Interim Action ROD (EPA/ROD/R10-96/134) directed removing hexavalent chromium from the groundwater under three reactor areas: 100-K, 100-H, and 100-D. The 100-KR-4 OU is also located in the north-central portion of the Hanford Site, upriver from the 100-HR-3 OU. The 100-KR-4 OU includes the groundwater underlying the 100-K East (KE) and 100-K West (KW) Reactor Areas. The 100-K Area is the site of two deactivated reactors: the KE Reactor, which operated from 1955 to 1971, and the KW Reactor, which operated from 1955 to 1970.

During the years of reactor operations, liquid waste containing significant quantities of chromium from reactor operations was discharged to the soil column at cribs, trenches, and french drains. Groundwater contaminated with chromium is present beneath the 100-K Reactor Areas. The 100-HR-3 and 100-KR-4 OU Interim Action ROD (EPA/ROD/R10-96/134) selected the interim remedy of groundwater P&T to intercept the hexavalent chromium plume under the 100-K Areas and an ion-exchange technology for treatment.

Nine storage areas are currently being used for miscellaneous soil waste management pertaining to Hanford Site groundwater OU remedial actions. Three of the storage areas are being used to support 100-KR-4 OU remedial action activities.

Small amounts of miscellaneous solid waste consisting primarily of paper wipes, latex gloves, plastic sheeting/bags/sleeving, filter media, plastic tubing, and absorbent material are generated as a result of remedial action activities, as well as excess soil and purge water. The individual OU waste container storage locations are commonly not located near the points of sample collection/maintenance activities, and a considerable amount of time is spent traveling to and from these storage locations throughout the day. The solid waste generated by these activities is physically similar, regardless of the location from which it was obtained.

DESCRIPTION OF SIGNIFICANT DIFFERENCES

This ESD allows for miscellaneous solid waste to be collected when generated from the 100-KR-4 OU transported, and stored at a central location in the Central Plateau. This approach includes the following benefits:

- Provides easier management and regulation by combining many individual waste storage areas into one
- Improves workability
 - Samplers begin and end the day at the same facility
 - Well maintenance personnel end the day at one facility
 - Waste management personnel have one area to inspect
- Removes waste storage areas from along the Columbia River
- Results in safer and more green remediation, with fewer miles required for waste management
- Provides cost savings

The changes made by this ESD do not fundamentally alter the selected remedy described in the 100-HR-3 and 100-KR-4 OU Interim Remedial Action ROD (EPA/ROD/R10-96/134), as amended. The significant

difference is that routinely generated miscellaneous solid waste can be collected, transported, and stored at a centralized location. Collection, transport, and storage of the solid waste will be conducted in accordance with the applicable or relevant and appropriate requirements identified in DOE/RL-2013-33 and DOE/RL-97-01.

Costs associated with managing miscellaneous solid waste at a centralized storage location are similar to those estimated for the selected remedy identified in the 100-HR-3 and 100-KR-4 OU Interim Action ROD (EPA/ROD/R10-96/134).

SUPPORT AGENCY COMMENTS

EPA (the lead regulatory agency for the 100-HR-4 OU) concurs with this ESD to the 100-HR-3 and 100-KR-4 OU ROD (EPA/ROD/R10-96/134).

AFFIRMATION OF STATUTORY DETERMINATIONS

The remedy, as revised by this ESD, continues to satisfy the requirements of CERCLA Section 121, “Cleanup Standards.” The revised remedy is protective of human health and the environment, will comply with the federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective.

The preamble to the NCP (40 CFR 300) clarifies that when noncontiguous facilities are reasonably close to one another and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4), “Response Authorities,” allows the lead agency to treat these related facilities as one site for response purposes and, therefore, allows the lead agency to manage waste transferred between such noncontiguous facilities without having to obtain a permit. The 100-KR-4 OUs and the 200 Centralized Groundwater Waste Storage Area (6265A Building, located in the Central Plateau) are considered to be a single site for response purposes under the 100-HR-3 and 100-KR-4 OU ROD (EPA/ROD/R10-96/134), as amended and modified. Solid waste stored at the 6265A Building will be segregated by OU and will not be commingled. A list of the federal and state ARARs that are to be complied with by the Selected Remedy, as revised by this ESD, is provided in the 100-KR-4 OU Interim Action ROD and in Table 1. Attachment 1 provides a figure showing the location of the 6265A Building, and Attachment 2 provides photographs of the building.

Table 1. Federal and Washington State ARARs for the Selected Remedy, as revised by this ESD

| Solid Wastes | | | |
|--|---|---|---|
| “Hazardous Waste Management” (RCW 70.105, as amended); “Dangerous Waste Regulations” (WAC 173-303) | | | |
| Regulatory Citation | Description of Regulatory Requirement | Rationale for Including | Application |
| “Land Disposal Restrictions” (WAC 173-303-140) | Establishes treatment requirements and disposal prohibitions for land disposal of dangerous waste and incorporates the federal land disposal restrictions (40 CFR 268). | Remediation may generate waste subject to land disposal restrictions. | Wastes subject to these requirements will be treated as required and disposed in a manner that satisfies standards. |

| | | | |
|---|--|---|---|
| "Requirements for Generators of Dangerous Waste" (WAC 173-303-170) | Establishes the requirements for dangerous waste generators. "Requirements for Generators of Dangerous Waste" (WAC 173-303-170[3]) which includes the substantive provisions of "Accumulating Dangerous Waste On-Site" (WAC 173-303-200) by reference. | Remedial actions may generate dangerous wastes. | Remediation wastes (e.g., contaminated soil, personnel protective gear, treatment chemicals) may be dangerous waste, and will be managed in accord with these requirements. |
| "Use and Management of Containers" (WAC 173-303-630), "Closure" (WAC 173-303-610(2), (4) and (5)) | Establishes requirements for dangerous waste facilities that store containers of dangerous waste. | Remedial actions may involve management of dangerous waste in containers that are subject to this standard. | Investigation and remedial actions that produce or manage containers of dangerous waste will be managed to meet standards. |

PUBLIC PARTICIPATION COMPLIANCE

The public participation requirements set forth in the NCP (40 CFR 300.435(c)(2)(i)) are met through the issuance of this ESD and associated informational sheet, and through public notification via a newspaper publication placed in the *Tri-City Herald*.

REFERENCES

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*. Available at: <http://www.gpo.gov/fdsys/pkg/CFR-2010-title40-vol27/xml/CFR-2010-title40-vol27-part300.xml>.

300.435, "Remedial Design/Remedial Action, Operation and Maintenance."

300.825, "Record Requirements After the Decision Document Is Signed."

Appendix B, "National Priorities List."

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at:

<https://www.csu.edu/cerc/researchreports/documents/CERCLASummary1980.pdf>.

Section 104, "Response Authorities."

Section 117, "Public Participation."

Section 121, "Cleanup Standards."

DOE/RL-97-01, 2016, *Interim Action Waste Management Plan for the 100-HR-3 and 100-KR-4 Operable Units*, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington, Available at: <https://pdw.hanford.gov/arpir/pdf.cfm?accession=0077175H>.

DOE/RL-2013-33, 2016, *Remedial Design/Remedial Action Work Plan for the 100-KR-4 Groundwater Operable Unit Interim Action*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: <http://pdw.hanford.gov/arpir/pdf.cfm?accession=0073409H>.

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

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

EPA, Ecology, and DOE, 2003, *Explanation of Significant Difference for the 100-HR-3 Operable Unit, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Washington State Department of Ecology, and U.S. Department of Energy, Seattle, Washington. Available at: <https://pdw.hanford.gov/arpir/pdf.cfm?accession=D1499872>.

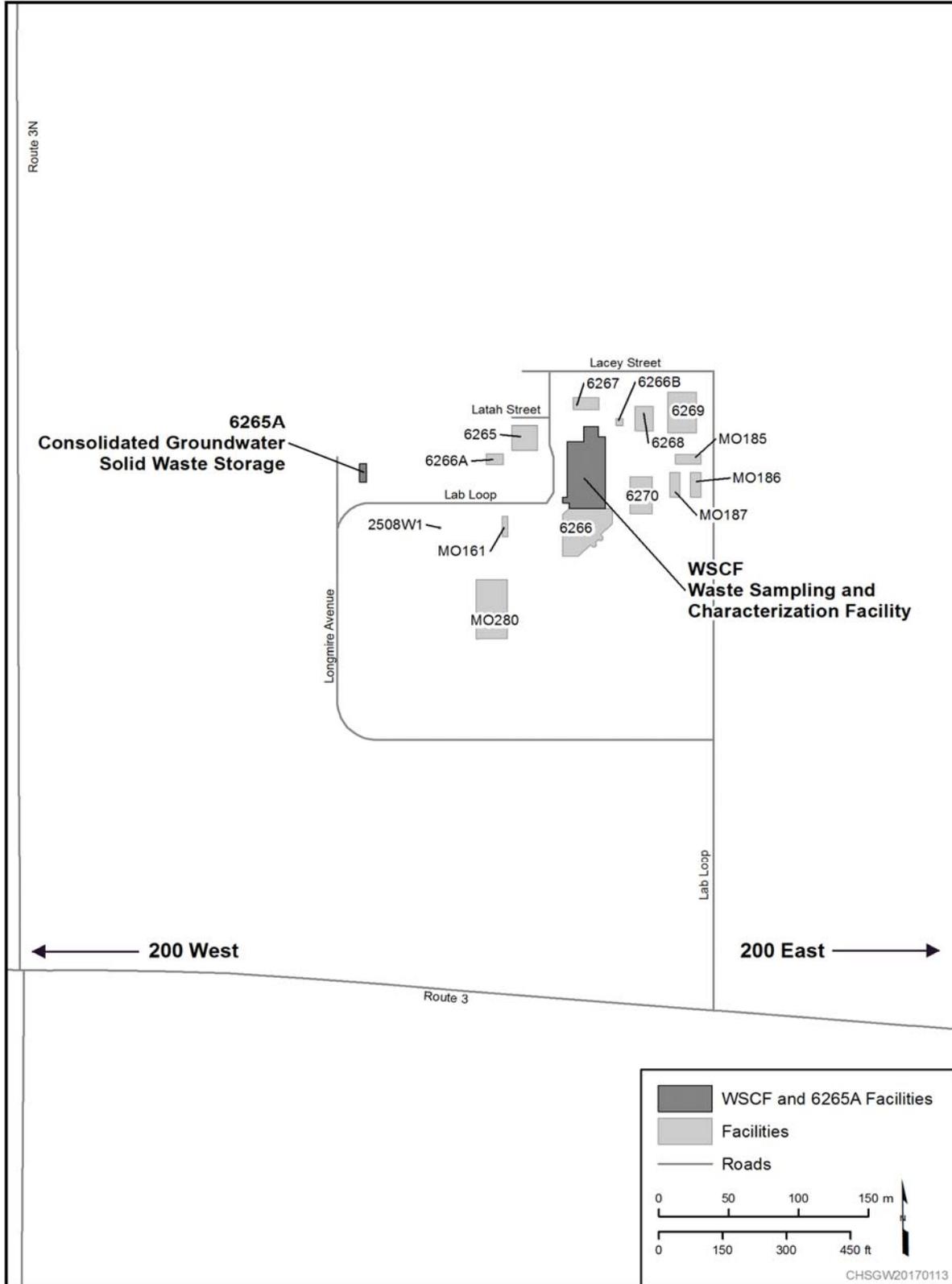
EPA, Ecology, and DOE, 2009, *Explanation of Significant Differences for the 100-HR-3 and 100-KR-4 Operable Units Interim Action Record of Decision: Hanford Site Benton County, Washington*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0096029>.

EPA/AMD/R10-00/122, 2000, *Interim Remedial Action Record of Decision Amendment for the 100-HR-3 Operable Unit, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Region 10, Washington State Department of Ecology, and U.S. Department of Energy, Seattle, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199159580>.

EPA/ROD/R10-96/134, 1996, *Record of Decision for the 100-HR-3 and 100-KR-4 Operable Units Interim Remedial Actions, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington. Available at: <http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0078950H>.

WAC 173-303-200, "Dangerous Waste Regulations," "Accumulating Dangerous Waste On-Site," *Washington Administrative Code*, Olympia, Washington. Available at: <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-200>.

Attachment 1. 6265A Building Location

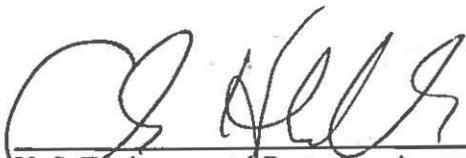


Attachment 2. 6265A Building Photographs



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Signature sheet for the *Explanation of Significant Differences for the 100-HR-3 and 100-KR-4 Operable Unit Interim Action Record of Decision*, between the U.S. Department of Energy and U.S. Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.



U. S. Environmental Protection Agency

7/10/19

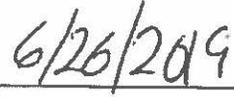
Date

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U. S. Department of Energy,
Richland Operations Office



Date

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Armando X. Lopez

Washington State Department of Ecology

7/16/2019

Date

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