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16-AMRP-0180

MAY 20 2016

Mr. Scott M. Sax, President
Washington Closure Hanford LLC
Richland, Washington 99354

Dear Mr. Sax:

CONTRACT NO. DE-AC06-05RL14655 – ENVIRONMENTAL RESTORATION DISPOSAL FACILITY OPERATIONS PLAN, WCH-179, REVISION 2

Attached for your use is the approved subject document. If you have any questions, please contact me, or your staff may contact Owen Robertson, of the River Corridor Closure Project, at (509) 373-6295.

Sincerely,

Jenise C. Connerly
Contracting Officer

AMRP:OCR

Attachment

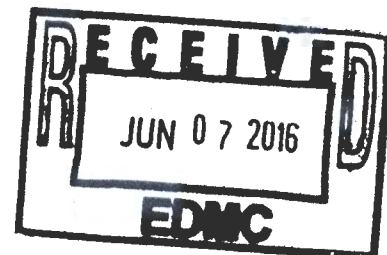
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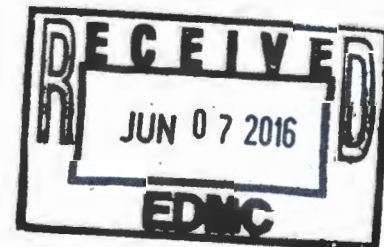
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River Corridor
Closure Contract

Environmental Restoration Disposal Facility Operations Plan

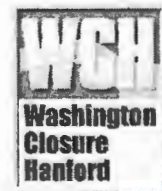
May 2016



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Washington Closure Hanford

Prepared for the U.S. Department of Energy, Richland Operations Office
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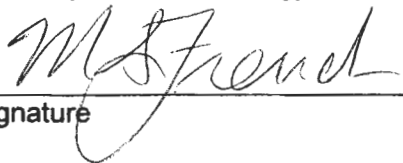
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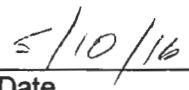
DOE-RL AND/OR REGULATOR APPROVAL PAGE

Title: Environmental Restoration Disposal Facility Operations Plan

Approval: M. S. French
U.S. Department of Energy, Richland Operations Office



Signature



Date

D. R. Einan
U.S. Environmental Protection Agency



Signature



Date

STANDARD APPROVAL PAGE

Title: Environmental Restoration Disposal Facility Operations Plan

Author Name: B. L. Lawrence

Approval: W. A. Borlaug, Waste Operations Project Engineer

W.A. Borlaug
Signature

5/4/2016
Date

The approval signature on this page indicates that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.

**River Corridor
Closure Contract** 

Environmental Restoration Disposal Facility Operations Plan

May 2016

Author:

B. L. Lawrence

For Public Release

Washington Closure Hanford

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

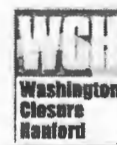


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REVISION HISTORY

Revision	Date	Reason for revision	Revision initiator
2	05/2016	Updated references; updated Section 5.1.3, Leachate Sampling and Analysis Plan; added a new Section 5.2.7, Environmental Restoration Disposal Facility Performance Assessment	B. L. Lawrence
1	02/2011	Updated Section 2.0, Facility Description and references	B. L. Lawrence
0	02/2008	Initial issuance	NA

1.0 INTRODUCTION

The selected remedy in the original Environmental Restoration Disposal Facility (ERDF) Record of Decision (ROD) required the U.S. Department of Energy (DOE) to develop and submit an ERDF operations plan to the U.S. Environmental Protection Agency (EPA) for approval, prior to ERDF operation (EPA 1995). The ERDF is operated under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) authority as a radioactive, hazardous/dangerous, asbestos, polychlorinated biphenyl (PCB), and mixed-waste land disposal facility. The purpose of the ERDF Operations Plan is to provide a description of the regulatory requirements and documented programs and plans that are to be used by the contractor to ensure safe and compliant operation of the ERDF.

2.0 FACILITY DESCRIPTION

The ERDF is a multi-celled landfill that is authorized to receive, stage, treat, and dispose of low-level radioactive waste, hazardous/dangerous waste, asbestos, PCB, and mixed (hazardous and radioactive) waste. The ERDF can be expanded to meet the Hanford Site environmental restoration needs. The current base design of the ERDF consists of waste isolation cells, with basic facility features for leachate and wastewater management. The ERDF is located in the 600 Area, between the 200 East and 200 West Areas of the Hanford Site, near Richland, Washington.

3.0 ERDF OPERATIONS PLAN SCOPE

The ERDF is a *Resource Conservation and Recovery Act of 1976* (RCRA)-compliant landfill authorized under CERCLA. Section 121(d) of CERCLA establishes cleanup standards for remedial actions and calls for compliance with applicable or relevant and appropriate requirements (ARARs). The facility is authorized to accept and dispose of low-level radioactive, hazardous and dangerous, asbestos, PCB, and mixed wastes generated by the Hanford Site restoration activities. The ERDF is also used to stage and treat waste before disposal. Waste acceptance criteria are in place to ensure that the design criteria of the landfill are met, the landfill is protective of the environment, and worker health and safety can be assured. The waste management process for waste streams designated for ERDF is accomplished in four steps: (1) characterization, (2) designation, (3) transportation and disposal, and (4) closeout.

4.0 ROLES AND RESPONSIBILITIES

The ERDF management and operations contractor is responsible to operate the facility and transport waste. The organizations using the ERDF are responsible for performing activities in accordance with ERDF policies, plans, guidelines, and procedures, as applicable. A system of

checks and balances is in place to ensure that the appropriate level of coordination exists among the ERDF and its various users. A series of interface points is designed to communicate waste receipt schedules, waste quantity and form, characterization information, waste certification, treatment requirements, packaging, transportation, documentation, receipt, and disposal. The following identifies specific responsibilities of the ERDF operations team and ERDF users.

4.1 ERDF OPERATIONS

The personnel assigned to ERDF operations are responsible for the following:

- Ensuring safe and environmentally-compliant operations at ERDF
- Ensuring a complete and adequate flow down of regulatory requirements to all plans and procedures and provide periodic verification of requirements in implementing plans and procedures
- Ensuring the applicable ERDF requirements flow down to the users and subcontractors
- Establishing and maintaining the ERDF waste acceptance criteria and process
- Reviewing and approving/rejecting profiles provided by ERDF users, including new waste based on health and safety, chemical and radiological characteristics, ERDF liner compatibility, physical form, ARARs, and requirements set forth in the ERDF Waste Acceptance Criteria (WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria* [ERDF WAC]) and the ERDF ROD (as amended) (EPA 1995, 1997, 1999, 2002, 2007, 2009, 2015a, 2015b)
- Managing the ERDF waste disposal operation program
- Integrating waste disposal services with ERDF users
- Ensuring that ERDF leachate is managed in accordance with regulatory requirements and CERCLA decision documents, including performance of analyses required by the ROD amendment for leachate delisting (EPA 1999)
- Maintaining a proactive quality assurance oversight program for timely identification of needed improvements or deficiencies and implementation of appropriate corrective actions.

4.2 ERDF USERS

Users of the ERDF are responsible for the following:

- Considering and incorporating (as necessary) ERDF requirements during the remedial design/remedial action process

- Interfacing with the ERDF management and operations team to ensure that packaging, labeling, and handling of each shipment is in compliance with the appropriate waste acceptance criteria and state/federal waste transport regulations
- Obtaining and/or confirming regulatory authority for disposal of waste at the ERDF
- Participating in routine planning discussions and submitting long-term and operational project schedules
- Developing, documenting, and implementing an appropriate sampling and analysis program approved by the lead regulatory agency (when required)
- Characterizing waste to ensure proper documentation of types and quantities of radionuclides, dangerous/hazardous constituents, and physical and chemical characteristics
- Evaluating treatment options for waste disposal, when applicable
- Preparing the waste profile, designating the waste, and obtaining ERDF acceptance for each waste source or group of waste sources
- Preparing an Onsite Waste Transfer Form or equivalent documentation required for each waste shipment
- Ensuring that any generator-specific deliberations and agreements related to waste or waste treatment that could affect ERDF are communicated and coordinated with ERDF.

5.0 PROJECT EXECUTION STRATEGY

The ERDF project execution strategy is composed of various criteria and plans that define and describe the processes for waste acceptance, regulatory compliance, and operation and maintenance of the ERDF. The strategy and supporting plans also must be executed within the boundaries as established by many Hanford Site programs that implement both contractual and regulatory requirements. The criteria and plans referenced and described in this Operations Plan are consistent with the original 1995 ROD submittal and subsequent submittals required by ROD amendments from EPA. The criteria and plans that constitute the ERDF operations are discussed in the following subsections. The criteria and plans are divided into two primary groupings. The first group is those criteria and plans that are submitted for regulatory review and approval. The second group of plans is those that complete the ERDF operations envelope and will be in effect as necessary and available for regulator review. ERDF will comply with ARARs as established in the various ERDF decision documents.

5.1 GROUP 1

The criteria and plans included in Group 1 are required to be submitted to EPA, in consultation with the Washington State Department of Ecology (Ecology), for review and approval. The requirements for regulatory review and approval are clearly defined in the ERDF ROD and

subsequent ROD amendments. In addition to this Operations Plan, the grouping consists of the following:

- WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*
- WCH-182, *Environmental Restoration Disposal Facility Leachate and Washwater Management Plan*
- WCH-173, *Environmental Restoration Disposal Facility Leachate Sampling and Analysis Plan*
- WCH-178, *Environmental Restoration Disposal Facility Waste and Material Management Plan*
- WCH-198, *Groundwater Protection Plan for the Environmental Restoration Disposal Facility*
- WCH-190, *Air Monitoring Plan for the Environmental Restoration Disposal Facility.*

5.1.1 Waste Acceptance Criteria

The ERDF WAC (WCH-191) defines the waste acceptance requirements for ERDF. The document describes the criteria and methodology established to ensure all waste shipped to and disposed of in ERDF meets applicable waste acceptance criteria requirements. Compliance with the WAC will enable implementation of appropriate measures to protect human health and the environment, ensure the integrity of the ERDF liner system, facilitate efficient use of the available space in ERDF, and comply with ARARs. To serve this purpose, the document defines responsibilities, identifies the waste acceptance process, and provides the primary acceptance criteria and regulatory citations to guide ERDF users. The ERDF WAC is identified as WCH-191 and is submitted separately.

5.1.2 Leachate and Washwater Management Plan

The *Environmental Restoration Disposal Facility Leachate and Washwater Management Plan* (LWMP) (WCH-182) establishes the requirements for managing leachate, decontamination washwater, and other contaminated water generated from ERDF operations and maintenance. The plan details requirements, protocols, and requisite documentation for the leachate and washwater management systems. The substantive requirements for the operation of leachate collection and removal systems are found in 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Subpart N. The ERDF is designed and constructed to meet the specified functions as listed in 40 CFR 264, Subpart N. Leachate is any liquid (including suspended components in the liquid) that has percolated through or drained from active or filled ERDF disposal cells. EPA (1999) authorized the delisting of the leachate and included the associated *Environmental Restoration Disposal Facility Leachate Sampling and Analysis Plan* (LSAP) (WCH-173). In addition to the expected leachate, ERDF may generate water from disposal cells that have not received wastes.

ERDF waste disposal operations will also generate washwater from decontamination operations that will be collected and appropriately managed. The scope of the plan may include policies and procedures necessary to collect, sample, analyze, determine a disposal option, and implement said disposal option for leachate, washwater, and other contaminated waters generated as a result of ERDF operations and maintenance. The LWMP was previously

approved by EPA, in consultation with Ecology. The revised LWMP is identified as WCH-182 and is submitted separately.

5.1.3 Leachate Sampling and Analysis Plan

The *Environmental Restoration Disposal Facility Leachate Sampling and Analysis Plan* (LSAP) (WCH-173) provides the sampling and analysis plan and sampling objectives for the ERDF leachate. Approved handling methods and conditional delisting of the leachate will be based on the requirements of this LSAP. There are two alternatives for handling ERDF leachate: (1) it can be reused at the ERDF or (2) it can be transferred or transported to an approved treatment facility (e.g., Effluent Treatment Facility, 200 West Area Pump-and-Treat Facility, or other approved facility) for treatment. Authorized alternatives for reuse of the leachate include dust suppression and waste compaction within the trench. These two alternatives will continue as methods to manage the leachate. Whether the leachate is reused or conveyed to an approved treatment facility, sampling is required to determine initial and ongoing compliance with the delisting criteria. Characterization data also are required for treatment. The LSAP contains baseline information to support the determination of leachate delisting on a compound-by-compound basis, evaluates the ongoing compliance of the leachate with delisting criteria, and determines the profile for liquid that will be transferred to an approved treatment facility. The eligibility of the leachate for delisting is determined through analysis of characterization samples. The LSAP is identified as WCH-173 and is submitted separately.

5.1.4 Waste and Material Management Plan

The *Environmental Restoration Disposal Facility Waste and Material Management Plan* (WMMP) (WCH-178) defines the process for waste fill sequencing, waste material placement, waste material compaction, and operations layer placement and compaction requirements to support ERDF operations. The requirements of the plan apply to waste disposal at ERDF. Waste received at ERDF will only be placed after it has been verified to meet the waste acceptance criteria requirements. The plan invokes operational implementation requirements for the waste filling sequence, waste types, waste placement, waste treatment/stabilization/void fill/subsidence control, and compaction. The WMMP is identified as WCH-178 and is submitted separately.

5.1.5 Groundwater Protection Plan

The *Groundwater Protection Plan for the Environmental Restoration Disposal Facility* (GWPP) (WCH-198) establishes a groundwater monitoring program that (1) meets ARARs associated with groundwater monitoring at RCRA land disposal units, (2) documents baseline groundwater conditions, (3) monitors those conditions for change, and (4) allows for modifications to groundwater sampling if required. The groundwater monitoring program presented in this plan will provide the means to assess onsite and offsite impacts to the groundwater. Data quality objectives (DQOs) were developed for establishing the baseline groundwater quality, routine groundwater monitoring program, and leachate management. The DQOs were developed jointly between DOE, EPA, Ecology, and the Environmental Restoration Contractor Team. The results of the DQO development have been incorporated into the GWPP. The GWPP was approved by the EPA, in consultation with Ecology. The GWPP is identified as document WCH-198 and is submitted separately.

5.1.6 Air Monitoring Plan

The *Air Monitoring Plan for the Environmental Restoration Disposal Facility (AMP)* (WCH-190) establishes the requirements for air monitoring associated with ERDF, quantification of radioactive emissions, and implementing as low as reasonably achievable control technology. The ERDF ROD requires air monitoring to detect potential migration of contaminants. Quantification of emissions, implementing control technology, and air monitoring has been identified as relevant and appropriate requirements for operation of the ERDF. The pertinent requirements are contained in 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," and *Washington Administrative Code 246-247*, "Radiation Protection-Air Emissions." Consistent with the Hanford Site practice for monitoring for diffuse/fugitive radionuclide air emissions, the AMP requires continuously operated particulate air samplers that are periodically analyzed for radionuclides. The AMP represents methods for compliance with the regulatory requirements. The ERDF air monitoring requirements were detailed in the ERDF Environmental Monitoring Plan and were approved by EPA. Several subsequent revisions were approved as part of a standalone AMP. The AMP is identified as document WCH-190 and is submitted separately.

5.2 GROUP 2

Group 2 of the ERDF Operations Plan further details the operations envelope for ERDF. This grouping represents activities and methods to help ensure compliance to requirements and implementation of best management practices through Washington Closure Hanford (WCH) and subcontractor programs and plans. The documentation for the activities identified as Group 2 is available for regulator review, if requested. The grouping consists of the following:

- Equipment maintenance
- Emergency action plan
- Training
- Security
- Quality assurance
- Health and safety
- ERDF performance assessment.

5.2.1 Equipment Maintenance

Equipment maintenance identifies the inspections and planned maintenance for ERDF equipment and systems. ERDF operations have developed and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. Maintenance activities are in accordance with manufacturer's recommendation and ensure periodic maintenance is conducted in a timely manner to facilitate continued operability. Preventive and corrective maintenance is performed by trained ERDF or subcontractor personnel or by offsite commercial businesses that specialize in equipment maintenance.

5.2.2 Emergency Action Plan

DOE/RL-94-02, *Hanford Emergency Management Plan*, contains the fundamental emergency requirements for ERDF activities. This plan is supplemented with other documents, such as DOE-0223, *Emergency Plan Implementing Procedures*; WCH procedures found in SEM-2, *Emergency Management Program*; and ERDF-specific emergency response procedures.

The plan and integrated implementing procedures are designed to provide for the immediate and subsequent response actions necessary to recognize incidents, abnormal conditions, and operational emergency events; to initiate initial protective actions; to categorize emergencies; and to notify Hanford Site emergency response personnel, WCH management, and offsite agencies, as applicable.

5.2.3 Training

The substantive requirements for ERDF training are found in 29 CFR 1910.120, "Hazardous Waste and Emergency Response Standard," and implemented as applicable by WCH procedure BSC-1, *Business Services and Communications*. ERDF personnel must be adequately trained to perform their duties in a manner that ensures compliant operation of the ERDF. Training and indoctrination of personnel at ERDF is commensurate with scope, complexity, importance of activities, education, experience, and proficiency of the individual. Personnel are qualified and trained to perform work activities.

5.2.4 Security

The ERDF area is controlled through posting, training, and access restrictions to protect the ERDF and its associated facilities and equipment. These security measures apply to all personnel desiring access to the ERDF site. The ERDF site is equipped with physical security including fencing surrounding the site, access gates, and associated locks. Physical security for ERDF also includes control of the facility when it is not occupied (i.e., during off-normal working hours) and security actions to be taken when the site is occupied during unusual incidents that require either evacuation or assistance by security forces.

5.2.5 Quality Assurance

ERDF quality assurance is implemented through the requirements of the quality program as directed in the current approved versions of WCH-51, *Quality Assurance Program Document* (QAPD). WCH-51 is the sitewide River Corridor Closure Contractor's quality assurance document. The ERDF is operated and maintained in accordance with the QAPD as well as subcontractor plans to ensure that project quality requirements are met. The quality assurance aspects of the ERDF disposal and operations must comply with DOE O 414.1C, *Quality Assurance*, and 10 CFR 830.120, "Nuclear Safety Management," as required by contract documents. ERDF personnel are required to be familiar with the quality assurance requirements and implementing procedures. The quality assurance program describes the organization, programs, and procedural requirements implemented to ensure that ERDF, contract, and regulatory quality requirements are satisfied and provides the framework for assessments of performance to the requirements and tracking/closure of corrective actions.

5.2.6 Health and Safety

The occupational health and safety program is described in the WCH Safety and Health Program and subcontractor health and safety documents. The purpose of the program is to provide information and direction to the ERDF project work team regarding hazards associated with operations and radioactive/hazardous waste disposal activities at ERDF. This program also establishes requirements and guidelines to protect workers and the public. Implementing procedures provide the content and direction to ensure that all known and anticipated work hazards are analyzed prior to the performance of work and that consideration is given to potential emergency conditions. The ERDF health and safety program is consistent with the core functions and guiding principles of WCH's Integrated Safety Management System. The plan implements the requirements contained in 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response"; 29 CFR 1926, "Safety and Health Regulation for Construction"; 10 CFR 851, "Worker Safety and Health Program"; 10 CFR 835, "Occupational Radiation Protection"; and DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*.

5.2.7 Environmental Restoration Disposal Facility Performance Assessment

The ERDF performance assessment (PA) provides an analysis of the projected impacts of the disposal of radionuclides to the environment compared to applicable DOE and EPA standards as per DOE O 435.1, *Radioactive Waste Management*. The ERDF PA groundwater and air pathway results are used to establish the ERDF waste acceptance criteria and radionuclide inventory threshold limits specified in the ERDF WAC (WCH-191).

PADL-ERDF-001, *Environmental Restoration Disposal Facility Performance Assessment Document System*, compiles all of the associated documents for the ERDF PA, including the primary PA document WCH-520, *Performance Assessment for the Environmental Restoration Disposal Facility, Hanford Site, Washington*.

6.0 REFERENCES

- 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.
- 10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.
- 10 CFR 851, "Worker Safety and Health Program," *Code of Federal Regulations*, as amended.
- 29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations*, as amended.
- 29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations*, as amended.
- 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

BSC-1, *Business Services and Communications*, Washington Closure Hanford, Richland, Washington.

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EPA, 2007, *U.S. Department of Energy, Environmental Restoration Disposal Facility, Hanford Site – 200 Area, Benton County, Washington; Amended Record of Decision, Decision Summary and Responsiveness Summary*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

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EPA, 2015a, *U.S. Department of Energy, Environmental Restoration Disposal Facility, Hanford Site – 200 Area, Benton County, Washington; Amended Record of Decision, Decision Summary and Responsiveness Summary*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 2015b, *U.S. Department of Energy, Environmental Restoration Disposal Facility, Hanford Site – 200 Area, Benton County, Washington – Explanation of Significant Difference (ESD)*, U.S. Environmental Protection Agency, Washington, D.C.

PADL-ERDF-001, 2015, *Environmental Restoration Disposal Facility Performance Assessment Document System*, current revision, Washington Closure Hanford, Richland, Washington.

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

SEM-2, *Emergency Management Program*, Washington Closure Hanford, Richland, Washington.

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

WCH-51, 2013, *Quality Assurance Program Document*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-173, 2015, *Environmental Restoration Disposal Facility Leachate Sampling and Analysis Plan*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-178, 2015, *Environmental Restoration Disposal Facility Waste and Material Management Plan*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-182, 2015, *Environmental Restoration Disposal Facility Leachate and Washwater Management Plan*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-190, 2009, *Air Monitoring Plan for the Environmental Restoration Disposal Facility*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-191, 2015, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-198, 2016, *Groundwater Protection Plan for the Environmental Restoration Disposal Facility*, current revision, Washington Closure Hanford, Richland, Washington.

WCH-520, 2013, *Performance Assessment for the Environmental Restoration Disposal Facility, Hanford Site, Washington*, current revision, Washington Closure Hanford, Richland, Washington.

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