

## U.S. Department of Energy

Hanford Field Office  
P.O. Box 550  
Richland, Washington 99352

November 13, 2025

25-SGD-0057

Mr. Geoff Schramm  
Remedial Project Manager  
U.S. Environmental Protection Agency, Region 10  
SEMD, Site Cleanup Section 4  
Hanford Project Office  
Richland, Washington 99352

Dear Mr. Schramm:

### COMPLIANCE MATRIX FOR THE 200 WEST PUMP AND TREAT OPERATIONS AND MAINTENANCE PLAN

This letter transmits to the following Compliance Matrix for the 200 West Pump and Treat Operations and Maintenance Plan for review.

- Compliance Matrix, DOE/RL-2009-124-ADD1, Draft A
- Waste Management Plan, DOE/RL-2009-124-ADD2, Draft A
- Feed Stream Acceptance Criteria, DOE/RL-2009-124-ADD5, Draft A

Your review and comments are requested within 45 days of receipt of this letter, per the Hanford Federal Facility Agreement and Consent Order.

If you have any questions, please contact me, or you may contact Celia Onishi, Subject Matter Expert, Soil and Groundwater Division, at (509) 376-5392

Sincerely,

NAOMI  
JASCHKE

Digitally signed by NAOMI  
JASCHKE  
Date: 2025.11.13 15:56:17  
-08'00'

Naomi M. Jaschke, Director  
Soil and Groundwater Division

SGD:CTO

Attachments

cc: See page 2

Mr. Geoff Schramm  
25-SGD-0057

-2-

November 13, 2025

Attachments:

1. Compliance Matrix
2. Waste Management Plan
3. Feed Stream Acceptance Criteria

cc w/attachs:

C. Buck, Wanapum  
L. C. Buelow, EPA  
L. Contreras, YN  
T. Q. Howell, Ecology  
T. A. Liebrecht, Ecology  
M. Murphy, CTUIR  
E. A. Rochette, Ecology  
S. N. Schleif, Ecology  
M. Woods, ODOE  
Administrative Record (200-BP-5, 200-PO-1)  
Environmental Portal  
HAB Facilitation (HAB@slind.net)

cc w/o attachs:

S. L. Brasher, HMIS  
L. K. O'Mara, CPCCo  
M. J. Turner, HMIS

Attachment 1  
25-SGD-0057

Compliance Matrix for the 200 West Pump and Treat  
Operations and Maintenance Plan  
DOE/RL-2009-124-ADD1, Draft A

(27 pages including cover sheet)

# Compliance Matrix for the 200 West Pump and Treat Operations and Maintenance Plan

Date Published  
October 2025

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

 U.S. DEPARTMENT OF  
**ENERGY** | Richland Operations  
Office  
**P.O. Box 550**  
**Richland, Washington 99352**

**APPROVED**  
*By Julia Killinger at 2:22 pm, Oct 29, 2025*

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Release Approval

Date

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## Signature Page

**Title:** *Compliance Matrix for the 200 West Pump and Treat Operations and Maintenance Plan*

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Print Name  
U.S. Department of Energy,  
Hanford Field Office

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Signature

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Date

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Print Name  
U.S. Environmental Protection Agency

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Signature

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Date

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## Contents

<b>1</b>	<b>Introduction and Purpose</b> .....	<b>1</b>
<b>2</b>	<b>References</b> .....	<b>13</b>

## Tables

Table 1.	200 West P&T Compliance Matrix .....	3
Table 2.	Identification of ARARs for the 200 West P&T.....	7

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## Acronyms

ALARA	as low as reasonably achievable
AM	action memorandum
ARAR	applicable or relevant and appropriate requirement
ASIL	acceptable source impact levels
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
COC	contaminant of concern
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
ECR	ecological compliance review
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ESD	explanation of significant differences
IC	institutional control
IDW	investigation-derived waste
IX	ion exchange
LDR	land disposal restriction
MCL	maximum contamination level
MCLG	maximum contamination level goal
MNA	monitored natural attenuation
MSU	modular storage unit
NCP	National Contingency Plan
O&M	operations and maintenance
OU	operable unit
P&T	pump and treat
PMP	performance monitoring plan
PNNL	Pacific Northwest National Laboratory
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RD/RA	remedial design/remedial action
RDR	remedial design report
ROD	record of decision
SAP	sampling and analysis plan
SQER	small quantity emissions rate
SWITS	Solid Waste Information and Tracking System
WMP	waste management plan
WPLIS	waste packaging and labeling instruction sheet

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## 1 Introduction and Purpose

This compliance matrix presents the requirements established for the remedies described in the bulleted list below, as applicable to the 200 West pump and treat (P&T). The 200 West P&T accepts groundwater from the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 Groundwater Operable Units (OUs); perched water from the 200-DV-1 OU; leachate from the Environmental Restoration Disposal Facility (ERDF); and purgewater from the modular storage units (MSUs). The *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remedial and removal action decisions pertinent to these water sources are documented in the following:

- EPA et al., 2008, *Record of Decision, Hanford 200 Area, 200-ZP-1 Superfund Site, Benton County, Washington* (hereinafter referred to as the 200-ZP-1 record of decision [ROD])
- EPA et al., 2012, *Record of Decision for Interim Remedial Action, Hanford 200 Area Superfund Site, 200-UP-1 Operable Unit* (hereinafter referred to as the 200-UP-1 interim ROD)
- EPA et al., 2021, *Interim Record of Decision for Hanford 200 Area Superfund Site 200-BP-5 and 200-PO-1 Operable Units* (hereinafter referred to as the 200-BP-5/200-PO-1 interim ROD)
- DOE/RL-2014-34, *Action Memorandum for 200-DV-1 Operable Unit Perched Water Pumping/Pore Water Extraction*
- EPA, 1999, *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*, as documented in EPA and DOE, 2015, *Explanation of Significant Differences for the U.S. Department of Energy Environmental Restoration Disposal Facility Hanford Site – 200 Area Benton County, WA*
- DOE/RL-2009-39, *Investigation-Derived Waste Purgewater Management Action Memorandum*, as modified by TPA-CN-0841, *Tri-Party Agreement Change Notice Form: DOE/RL-2009-39, Investigation-Derived Waste Purgewater Management Action Memorandum, Rev. 0*

The purpose of this compliance matrix is to consolidate the compliance requirements of remedies that use the 200 West P&T facility. Table 1 provides a compliance matrix for each of the remedies, and Table 2 provides federal and Washington State applicable or relevant and appropriate requirements (ARARs). The compliance requirements provided in this addendum are not comprehensive for each remedy – they are only the requirements that are applicable to the 200 West P&T.

The overarching objective of the compliance matrix is to provide the 200 West P&T facility operations team (particularly the operations manager, environmental compliance officer, and waste management lead) with the means to track the status of remedial/removal action requirements. This capability will ensure that compliance performance is satisfactory, and it will allow the operations team to avoid, or rapidly correct, potential noncompliance issues. The compliance matrix does not replicate project-specific methodologies and procedures used to meet required actions; rather, this matrix provides the most expedient means for a user to locate where this reference information can be obtained.

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**Table 1. 200 West P&T Compliance Matrix**

Line #	Source Documents	Summary of Requirement	Compliance Methodology	Comments
1	200-ZP-1 ROD (Part I, 4.3.1), 200-ZP-1 ROD (Part II, 12.2.1), 200-ZP-1 ROD (Part II, 12.4) (EPA et al., 2008)	The system will be designed to capture and treat contaminated groundwater to reduce the mass of carbon tetrachloride, total chromium, <sup>a</sup> hexavalent chromium, nitrate, trichloroethene, iodine-129, and technetium-99 throughout the 200-ZP-1 OU by a minimum of 95% in 25 years.	Remedy design details are provided in the approved 200-ZP-1 RD/RA work plan (DOE/RL-2008-78), the 200 West P&T RDR (DOE/RL-2010-13), the 200-ZP-1 PMP (DOE/RL-2009-115), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Contaminant treatment and monitoring procedures associated with the groundwater P&T system are provided in the 200-ZP-1 PMP (DOE/RL-2009-115) and in the 200 West P&T SAP (DOE/RL-2009-124-ADD4). Performance of the 200 West P&T will be communicated to the regulator(s) during routine briefings and summarized in annual reports.
1a	200-UP-1 interim ROD (Part I, 4.3.1; Part II, 12.2.1; Part II, 12.4) (EPA et al., 2012)	The P&T system will be designed and implemented in combination with monitored natural attenuation to achieve cleanup levels for all COCs in the 200-UP-1 OU, except iodine-129, within the following timeframes: 15 years for technetium-99, 25 years for uranium; 25 years for total chromium <sup>a</sup> and hexavalent chromium through P&T; 35 years for nitrate through P&T and MNA; 125 years for carbon tetrachloride through P&T and MNA; and 25 years for tritium through MNA.	Remedy design details are provided in the approved 200-UP-1 RD/RA work plan (DOE/RL-2013-07), the 200 West P&T RDR (DOE/RL-2010-13), the 200-UP-1 PMP (DOE/RL-2015-14), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Contaminant treatment and monitoring procedures associated with the groundwater P&T system are provided in the 200-UP-1 PMP (DOE/RL-2015-14) and in the 200 West P&T SAP (DOE/RL-2009-124-ADD4). Performance of the 200 West P&T will be communicated to the regulator(s) during routine briefings and summarized in annual reports.
1b	200-BP-5/200-PO-1 interim ROD (Part I, 4.3.1; Part II, 12.2.1; Part II, 12.4) (EPA et al., 2021)	The groundwater extraction and treatment component will use a P&T system that will consist of a network of groundwater extraction wells, conveyance piping (with transfer pump stations), and use of the existing groundwater treatment facility in the 200 West Area, which will be upgraded under this alternative by adding an IX system designed to remove both technetium-99 and uranium to meet the 200-BP-5 and 200-PO-1 selected interim remedy treatment requirements.	Remedy design details are provided in the approved 200-BP-5/200-PO-1 RD/RA work plan (DOE/RL-2020-41), the 200-BP-5/200-PO-1 RDR (DOE/RL-2020-41-ADD5), the 200-BP-5/200-PO-1 PMP (DOE/RL-2020-41-ADD1), the 200 West P&T O&M plan (DOE/RL-2009-124), and the 200 West P&T RDR (DOE/RL-2010-13).	An additional technetium-99 IX treatment train was added for the 200-BP-5 and 200-PO-1 OUs. Both technetium-99 and uranium IX treatment occur, although not through the same IX system for both constituents as stated in the 200-BP-5/200-PO-1 interim ROD (Ecology et al., 2021). Contaminant treatment and monitoring procedures associated with the groundwater P&T system are provided in the 200-BP-5/200-PO-1 PMP (DOE/RL-2020-41-ADD1) and in the 200 West P&T SAP (DOE/RL-2009-124-ADD4). Performance of the 200 West P&T will be communicated to the regulator(s) during routine briefings and summarized in annual reports.
1c	200-DV-1 OU AM (Chapter 1; Chapter 3) (DOE/RL-2014-34)	The selected alternative consists of pumping/extracting water from the 200-DV-1 OU perched zone and then transferring the water to the 200 West P&T, where it will be treated to remove contaminants and then injected into the aquifer beneath the 200 West Area. The COCs (with the exception of tritium and nitrate <sup>b</sup> ) will be treated at the 200 West P&T to below MCLs to meet the injection criteria.	Design details are provided in the approved 200-DV-1 removal action work plan (DOE/RL-2014-37), the 200 West P&T O&M plan (DOE/RL-2009-124), and the 200 West P&T RDR (DOE/RL-2010-13).	Contaminant treatment and monitoring procedures associated with the groundwater P&T system are provided in the 200-DV-1 SAP (DOE/RL-2014-51) and in the 200 West P&T SAP (DOE/RL-2009-124-ADD4). Performance of the 200 West P&T will be communicated to the regulator(s) during routine briefings and summarized in annual reports.

Table 1. 200 West P&T Compliance Matrix

Line #	Source Documents	Summary of Requirement	Compliance Methodology	Comments
2	200-ZP-1 ROD (Part I, 4.3.2; Part II, 12.2.2) (EPA et al., 2008), 200-ZP-1 RD/RA work plan (Section 2.1.2) (DOE/RL-2008-78)	<p>Monitoring shall be conducted to evaluate the performance of the P&amp;T system, flow-path control, and MNA. Monitoring locations, points of compliance, and specifications will be developed as part of RD/RA documents to provide data on performance. Monitoring will provide the following:</p> <ul style="list-style-type: none"> <li>• Detect changes in environmental conditions (e.g., hydrogeologic, geochemical, microbiological, or other changes) that may reduce the efficacy of the P&amp;T system, natural attenuation processes, and the flow-path control actions.</li> <li>• Identify potentially toxic and/or mobile transformation products.</li> <li>• Verify that contamination is not expanding downgradient, laterally, or vertically subsequent to the period of time over which the P&amp;T component has been functional.</li> <li>• Detect new releases of contaminants of concern to the environment that could impact the effectiveness of the remedy.</li> <li>• Verify attainment of remediation requirements.</li> </ul> <p>RD/RA documents will be reviewed and approved by EPA.</p>	Monitoring details are provided in the approved 200-ZP-1 RD/RA work plan (DOE/RL-2008-78), the 200-ZP-1 PMP (DOE/RL-2009-115), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Monitoring is described in the 200 West P&T O&M plan (DOE/RL-2009-124) and in the 200-ZP-1 PMP (DOE/RL-2009-115) and is evaluated annually.
2a	200-UP-1 interim ROD (Part II, 12.2.4) (EPA et al., 2012), 200-UP-1 RD/RA work plan (Section 2.1.2) (DOE/RL-2013-07)	<p>Monitoring shall be conducted to evaluate the performance of the P&amp;T system, hydraulic containment, and MNA components of the selected remedy and shall be designed and operated to:</p> <ul style="list-style-type: none"> <li>• Demonstrate whether the remedial action being taken, including natural attenuation, will achieve cleanup levels for all COCs (except iodine-129) in the specified timeframe.</li> <li>• Detect changes in environmental conditions (e.g., hydrogeologic, geochemical, microbiological, or other changes) that may impact the P&amp;T system, natural attenuation processes, and the hydraulic containment actions.</li> <li>• Verify that the contamination is not expanding downgradient, laterally, or vertically subsequent to the period of time over which the P&amp;T and hydraulic containment components have been functional.</li> <li>• Detect new releases of final contaminants of potential concern to the environment that could impact the effectiveness of the remedy.</li> <li>• Verify attainment of remediation requirements.</li> </ul>	Monitoring details are provided in the approved 200-UP-1 RD/RA work plan (DOE/RL-2013-07), the 200-UP-1 PMP (DOE/RL-2015-14), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Monitoring is described in the 200 West P&T O&M plan (DOE/RL-2009-124) and in the 200-UP-1 PMP (DOE/RL-2015-14) and is evaluated annually.
2b	200-BP-5/200-PO-1 interim ROD (Part II, 12.2.2) (EPA et al., 2021), 200-BP-5/200-PO-1 RD/RA work plan (Section 2.1.4) (DOE/RL-2020-41)	<p>Monitoring shall be conducted to evaluate the P&amp;T system performance for the selected interim remedy and shall be designed to:</p> <ul style="list-style-type: none"> <li>• Demonstrate whether the remedial action being taken will achieve cleanup levels for all COCs in the specified timeframe.</li> <li>• Detect changes in environmental conditions (e.g., hydrogeologic, geochemical, microbiological, or other changes) that may impact the P&amp;T system.</li> <li>• Verify that the contamination is not expanding downgradient, laterally, or vertically subsequent to the period of time over which the P&amp;T component has been functional.</li> <li>• Verify attainment of remediation requirements.</li> </ul>	Monitoring details are provided in the approved 200-BP-5/200-PO-1 RD/RA work plan (DOE/RL-2020-41), the 200-BP-5/200-PO-1 PMP (DOE/RL-2020-41-ADD1), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Monitoring is described in the 200 West P&T O&M plan (DOE/RL-2009-124) and in the 200-BP-5/200-PO-1 PMP (DOE/RL-2020-41-ADD1) and is evaluated annually.

Table 1. 200 West P&T Compliance Matrix

Line #	Source Documents	Summary of Requirement	Compliance Methodology	Comments
3	200-ZP-1 ROD (Part I, 4.3.3; Part II, 12.2.3) (EPA et al., 2008), 200-ZP-1 RD/RA work plan (Section 2.1.3) (DOE/RL-2008-78)	Groundwater modeling is required to locate extraction wells, estimate rates, and locate injection wells for flow-path control in accordance with RD/RA documents. Flow-path control shall be used as follows: <ul style="list-style-type: none"> <li>To slow natural eastward flow of most groundwater to keep COCs in the capture zone</li> <li>To minimize potential for groundwater in the northern portion of the aquifer to flow through Gable Cap to the Columbia River</li> </ul> RD/RA documents will be reviewed and approved by EPA.	Flow-path control details are provided in the approved 200-ZP-1 RD/RA work plan (DOE/RL-2008-78), the 200 West P&T RDR (DOE/RL-2010-13), the 200-ZP-1 PMP (DOE/RL-2009-115), and the 200 West P&T O&M plan (DOE/RL-2009-124).	Flow-path control monitoring methods are described in the 200-ZP-1 PMP (DOE/RL-2009-115). Flow-path control performance is evaluated annually.
4	200-UP-1 interim ROD (Part I, 4.3.3; Part II, 12.2.3) (EPA et al., 2012), 200-UP-1 RD/RA work plan (Section 2.1.3) (DOE/RL-2013-07)	A technology evaluation for iodine-129 was completed as part of the feasibility study (DOE/RL-2009-122) that determined that there is currently no treatment technology that can achieve the federal drinking water standard of 1 pCi/L for the iodine-129 concentrations present in the 200-UP-1 OU. Therefore, P&T is not currently a viable remedy for this contaminant. The interim ROD requires that DOE evaluate potential treatment options for iodine-129 as part of the selected remedy through further technology evaluation. The approach to the evaluation will be defined in an iodine-129 technology evaluation plan to be reviewed and approved by EPA.  Hydraulic containment of the iodine-129 plume will be implemented until a subsequent remedial decision for the plume is made. Effective hydraulic containment is expected to rely on injection wells placed at the leading edge of the iodine-129 plume. Treated water from the 200 West groundwater treatment facility will be pumped to the injection wells.	Following the interim ROD, extensive literature searches and treatability studies were conducted to evaluate potentially viable remedial technologies for iodine-129 (e.g., DOE/RL-2015-69, PNNL-29148). No technologies were identified that would be technically practicable for remediating iodine-129 in the 200-UP-1 OU.	Implementation of the iodine-129 treatment technology evaluation component of the remedy is complete, as documented in DOE/RL-2015-69 and PNNL-29148.
5	200-ZP-1 ROD (Part II, 12.1) (EPA et al., 2008), 200-UP-1 interim ROD (Part II, 10.3) (EPA et al., 2012), 200-BP-5/200-PO-1 interim ROD (Part II, 10.3) (EPA et al., 2021)	Treatment residuals generated as part of this action are expected to meet waste disposal criteria for onsite disposal in ERDF. Waste that does not meet ERDF waste acceptance criteria will be sent offsite for treatment and disposal.  Any offsite disposal will require a facility acceptability determination by EPA that the facility can receive CERCLA waste.	Treatment residuals meeting the waste acceptance criteria will be disposed in ERDF. Waste that does not meet ERDF waste acceptance criteria will be evaluated for additional treatment at an onsite or offsite facility prior to ERDF disposal.	Treatment residual disposal/treatment will occur on an as-needed basis and will follow applicable waste management functions identified in the following WMPs: <ul style="list-style-type: none"> <li>200 West P&amp;T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2)</li> <li>200-UP-1 OU WMP (DOE/RL-2016-13)</li> <li>200-BP-5 and 200-PO-1 WMP/waste control plan (DOE/RL-2022-14)</li> </ul> IDW and remediation waste will be stored at storage areas described in the WMPs. Additional details about waste storage are provided in the WMPs.  Accumulation, staging, storage, profiling, packaging, and labeling details for each waste are documented on the WPLIS.  Disposal records are maintained in the Hanford Site SWITS database.
6	200-ZP-1 ROD (Part II, 12.3) (EPA et al., 2008), 200-UP-1 interim ROD (Part II, 12.3) (EPA et al., 2012), 200-BP-5/200-PO-1 interim ROD (Part II, 12.3) (EPA et al., 2021), 200-DV-1 OU AM (Section 5.5) (DOE/RL-2014-34)	New information and data collected during the engineering design or implementation of the selected remedy that have a major impact on cost.	Major changes will be documented in the form of a memorandum in the Administrative Record file, a CERCLA ESD, or a ROD/interim ROD amendment, as appropriate.	As necessary.

Table 1. 200 West P&T Compliance Matrix

Line #	Source Documents	Summary of Requirement	Compliance Methodology	Comments
7	200-ZP-1 ROD (Part II, 13.2) (EPA et al., 2008), 200-UP-1 interim ROD (Part II, 13.2) (EPA et al., 2012), 200-BP-5/200-PO-1 interim ROD (Part II, 13.2) (EPA et al., 2021)	The NCP (40 CFR 300.430[f][5][iii][B] and [C]) requires that a ROD/interim ROD describe the federal and state ARARs that the selected remedy will attain and any ARARs the remedy will not meet, the waiver invoked, and the justification for any waivers.	The RODs/interim RODs provide definitive lists of ARARs to be attained by the selected remedy, organized by federal requirements and Washington State requirements, as well as describing “to-be-considered” criteria that were used in developing the remedy.	See requirements that correspond to the ROD/interim ROD ARAR tables for chemical-, location-, and action-specific requirements.
8	200-ZP-1 ROD (Part II, Table 11) (EPA et al., 2008), ARAR (40 CFR 141.61), ARAR (40 CFR 141.62), ARAR (40 CFR 141.66), ARAR (WAC 173-340-720([4][b] [iii][A] and [B])), ARAR (WAC 173-340-720[7][b])	The final cleanup levels identified in the ROD for 200-ZP-1 OU groundwater are federal and state drinking water MCLs and state groundwater cleanup standards (where more stringent than MCLs). <ul style="list-style-type: none"> <li>• Carbon tetrachloride: 3.4 µg/L</li> <li>• Chromium (total<sup>a</sup>): 100 µg/L</li> <li>• Chromium (hexavalent): 48 µg/L</li> <li>• Iodine-129: 1 pCi/L</li> <li>• Nitrate (as nitrate, N): 10,000 µg/L</li> <li>• Technetium-99: 900 pCi/L</li> <li>• Trichloroethene: 1 µg/L</li> <li>• Tritium: 20,000 pCi/L</li> </ul>	Groundwater wells will be sampled to monitor the progress of remediating contaminated groundwater to achieve final cleanup levels. Monitoring will begin during the early stages of construction and will continue throughout treatment and closure to ensure that cleanup levels have been met.  Following extraction, the COCs <sup>c</sup> in groundwater will be treated to achieve cleanup levels. The treated groundwater will then be returned to the aquifer through injection wells. COC biological degradation products will be treated as part of the P&T and MNA components of the remedy.	MCL/MCLG measurements are described in the 200 West P&T SAP (DOE/RL-2009-124-ADD4).
8a	200-UP-1 interim ROD (Part II, Table 14) (EPA et al., 2012), ARAR (40 CFR 141.61), ARAR (40 CFR 141.62), ARAR (40 CFR 141.66), ARAR (WAC 173-340-720([4][b] [iii][A] and [B])), ARAR (WAC 173-340-720[7][b])	The final cleanup levels identified in the ROD for 200-UP-1 OU groundwater are federal and state drinking water MCLs and state groundwater cleanup standards (where more stringent than MCLs). <ul style="list-style-type: none"> <li>• Carbon tetrachloride: 3.4 µg/L</li> <li>• Chromium (total<sup>a</sup>): 100 µg/L</li> <li>• Chromium (hexavalent): 48 µg/L</li> <li>• Iodine-129: 1 pCi/L</li> <li>• Nitrate (as NO<sub>3</sub>): 45 mg/L</li> <li>• Nitrate (as N): 10 mg/L</li> <li>• Technetium-99: 900 pCi/L</li> <li>• Tritium: 20,000 pCi/L</li> <li>• Uranium: 30 µg/L</li> </ul>		
8b	200-BP-5/200-PO-1 interim ROD (Part II, Table 3) (EPA et al., 2021), ARAR (40 CFR 141.61), ARAR (40 CFR 141.62), ARAR (40 CFR 141.66), ARAR (WAC 173-340-720([4][b] [iii][A] and [B])), ARAR (WAC 173-340-720[7][b])	The risks from target COCs associated with the use of 200-BP-5 and 200-PO-1 groundwater as a drinking water source will be addressed by reducing the target COC concentrations in groundwater in the target remediation area to the groundwater cleanup levels: <ul style="list-style-type: none"> <li>• Technetium-99: 900 pCi/L</li> <li>• Uranium: 30 µg/L</li> </ul>		

Note: The references cited in this table are provided in Chapter 2 of this addendum. The acronyms used in this table are included in the Acronym list located in the front matter of this addendum.

a. Total chromium refers to the combined amount of all the forms of chromium, including trivalent and hexavalent.

b. There are currently no viable treatment technologies for tritium. Nitrate in 200-DV-1 OU perched water is excluded from treatment for the duration of the 200-ZP-1 optimization study plan (DOE/RL-2019-38).

c. There are currently no viable treatment technologies for tritium and iodine-129. Additionally, nitrate and hexavalent chromium are not currently being treated due to the suspension of biological treatment in October 2019 for the 200-ZP-1 optimization study plan (DOE/RL-2019-38). Incidental recovery of hexavalent chromium through the IX resins does occur.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
1	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021)	WAC 173-218-040; <i>Interim Control of Hazardous Waste Injection</i> , 42 USC 6939b, et seq., Section 3020[b]; WAC 173-218-120	Establishes requirements to allow injection of groundwater that contains hazardous waste back into the aquifer during implementation of a CERCLA remedy. Injection wells used to return treated groundwater to an aquifer must meet the classification criteria of a Class IV well and shall be abandoned following completion of the remedial action. Establishes requirements for the decommissioning of injection wells.	Extracted groundwater from the OUs will be treated to achieve cleanup levels before returning it to the aquifer through the injection wells. Treated effluent will be periodically tested prior to injection into the aquifer. Periodic testing (grab samples) will be used to demonstrate compliance. Treatment system may continue to operate if discharge concentrations are greater than cleanup levels.  Injection wells will be decommissioned in accordance with the standards specified in the regulation.	Effluent measurements are described in the 200 West P&T O&M plan (DOE/RL-2009-124) and, as appropriate, in the 200 West P&T SAP (OE/RL-2009-124-ADD4).
2	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 OU interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34)	<i>Archeological and Historic Preservation Act of 1960</i> , 16 USC 469–469c-2, et seq.	Requires that remedial/removal actions at the 200-ZP-1 OU will not cause the loss of any archaeological or historic data. This act mandated preservation of data and does not require protection of the actual historical sites	In 1987 and 1988, a comprehensive archaeological resources review of the Central Plateau was conducted that included an examination of samples collected from undisturbed portions of the 200 West Area. The inventory reported no significant surface archaeological finds.	Cultural and ecological survey results and recommendations are listed in SGW-48726, <i>Mitigation Action Plan for the 200 West Area Groundwater Remediation Project</i> (Appendix B), and are maintained in the project files.
3	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34)	<i>National Historic Preservation Act of 1966</i> , 16 USC 470, et seq., Section 106	Requires federal agencies to consider the impacts of their undertaking on cultural properties through identification, evaluation, and mitigation processes.	In 1987 and 1988, a comprehensive archaeological resources review of the Central Plateau was conducted that included an examination of samples collected from undisturbed portions of the 200 West Area. The inventory reported no significant surface archaeological finds.	Cultural and ecological survey results and recommendations are listed in SGW-48726 (Appendix B) and are maintained in the project files.
4	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34)	<i>Endangered Species Act of 1973</i> , 16 USC 1531[a], et seq.; and <i>Interagency Cooperation</i> , 16 USC 1536[c], et seq.	Prohibits actions by federal agencies that are likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of habitat critical to them. Mitigation measures must be applied to actions that occur within critical habitats or surrounding buffer zones of listed species in order to protect the resource.	Results from previous surveys documented in ECR #2009-200-022 and ECR #2009-200-023, and DOE/EIS-0391, <i>Final Tank Closure and Waste Management EIS for the Hanford Site, Richland, Washington</i> (November 2012). Compliance procedures with EIS requirements are established in DOE/RL-95-11, <i>Ecological Compliance Assessment Management Plan</i> (Rev. 2, dated September 2006), and DOE/RL-96-32, <i>Hanford Site Biological Resources Management Plan</i> (dated 2001).	Evidence of listed species and/or their critical habitat requires a Request for Cultural and/or Ecological Resources Review for the Hanford Site (Hanford Form RL-665). Responsibility for conducting the ecological compliance review is assigned to PNNL. Actions requiring an ecological compliance review include the following: (1) if the project occurs outside of a building, (2) if biota are present at the affected site, or (3) if an excavation permit is required for the action.
5	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34)	<i>Native American Graves Protection and Repatriation Act of 1990</i> , 25 USC 3001, et seq.	Establishes federal agency responsibility for discovery of human remains, associated and unassociated funerary objects, sacred objects, and items of cultural patrimony. Requires consultation with the Native American Tribes in the event of discovery.	Comprehensive archaeological resource surveys of the fenced portions of the 200 Areas indicate that minimal resources exist in project area (DOE/EIS-0391, <i>Final Tank Closure and Waste Management EIS for the Hanford Site, Richland, Washington</i> , dated November 2012).  Compliance procedures with cultural and archaeological requirements are provided in DOE/RL-98-10, <i>Hanford Cultural Resources Management Plan</i> .	Expansion of remedial and removal action activities to areas beyond those previously surveyed requires a Request for Cultural and/or Ecological Resources Review for the Hanford Site (Hanford Form RL-665) from PNNL.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
6	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 OU interim ROD (EPA et al., 2021)	WAC 173-160-161, WAC 173-160-171, WAC 173-160-181, WAC 173-160-400, WAC 173-160-420, WAC 173-160-430, WAC 173-160-440, WAC 173-160-450, WAC 173-160-460	Well planning and construction. Well location requirements. Preserving natural barriers between aquifers. Standards for resource protection wells and geotechnical borings. Construction requirements for resource protection wells. Minimum casing standards. Equipment cleaning standards. Well sealing requirements. Decommissioning for resource protection wells.	All monitoring, injection, and extraction wells completed for groundwater OU remediation activities will meet the substantive requirements of these regulations.	Well construction information is provided in the following documents: <ul style="list-style-type: none"><li>• <i>Hanford Site Well Management Plan</i> (DOE/RL-2003-13, Rev. 0, dated June 2003)</li><li>• SAPs for drilling of extraction wells at the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 OUs, and for 200-DV-1 OU perched water</li></ul>
7	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-016	Identifies those materials that are and are not solid wastes.	Waste materials generated from the remedial and removal actions will be evaluated for solid waste properties in accordance with the substantive requirements of WAC 173-303-016.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) waste designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
8	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-017	Identifies materials that are and are not solid wastes when recycled.	IDW and remediation waste generated during the remedial and removal actions that can be recycled will meet the substantive portion of these requirements.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) waste designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
9	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-070[3]	Establishes whether a solid waste is, or is not, a dangerous waste or an extremely hazardous waste.	Substantive requirements apply to IDW and remediation waste generated from remedial and removal activities. Media and treatment residuals generated will be designated according to the procedures identified in WAC 173-303-070(3).	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) states that IDW and remediation waste that comes into contact with 200-ZP-1, 200-UP-1, and 200-BP-5/200-PO-1 OU groundwater will be designated with F001 through F005 RCRA-listed waste codes, at a minimum. Waste designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
10	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-120[3] and [5]	These regulations define the requirements for recycling materials that are solid and dangerous waste. Specifically, WAC 173-303-120(3) provides for the management of certain recyclable materials.	IDW and remediation waste generated from the remedial and removal actions will be reviewed against the requirements for recyclable materials. If recyclable materials are generated, they will be managed according to the substantive requirements of WAC 173-303-120(3).	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
11	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-170, WAC 173-303-200, WAC 173-303-630, WAC 173-303-640	Establishes the requirements for dangerous waste generators. For purposes of this remedial action, WAC 173-303-170(3) includes the substantive provisions of WAC 173-303-200 by reference. WAC 173-303-200 further includes certain substantive standards from WAC 173-303-630 and -640 by reference. These requirements include the substantive portions of WAC 173-303-630 ("Use and Management of Containers") and WAC 173-303-640 ("Tank Systems"). Dangerous waste will be treated by the selected remedy; thus, the substantive portions of WAC 173-303-640(4) ("Containment and Detection of Releases [from Tank Systems]") apply to key design and operational requirements. Secondary containment for new tank systems and ancillary equipment, which includes the collection piping, must be provided with secondary containment, except for aboveground piping that is visually inspected for leaks daily. A variance from daily inspections may be obtained per the requirements of WAC 173-303-640(4)(9) and as approved by Ecology.	IDW and remediation waste generation actions will meet the substantive requirements of WAC 173-303-170 and WAC 173-303-200. Aboveground piping in the OUs without secondary containment will be visually inspected and recorded in accordance with these requirements, and approved variances.	Chapter 3 of the 200 West P&T O&M plan (DOE/RL-2009-124) establishes the following: <ul style="list-style-type: none"> <li>Flowmeter monitoring is used for pipeline leak detection in place of pipe walkdowns.</li> <li>The treated groundwater is regarded to no longer contain F001 through F005 listed waste.</li> </ul>
12	200-ZP-1 ROD (EPA et al., 2008) 200-DV-1 AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39)	WAC 173-303-64620[4]	Establishes requirements for corrective action for releases of dangerous wastes and dangerous constituents including releases from solid waste management units.	Corrective action requirements will be completed under CERCLA authority. The selected remedies meet the State of Washington requirements.	Washington's RCRA-authorized <i>Hazardous Waste Management Act</i> (RCW 70A.300) and dangerous waste regulations (WAC 173-303) give Ecology corrective action jurisdiction concurrent with CERCLA. As stated in the ROD (Section 10.8, p. 53, "State Acceptance"), Ecology supports and accepts the 200-ZP-1 OU remedy under the <i>Hanford Federal Facility Agreement and Consent Order</i> (Ecology et al., 1989) and the CERCLA program as satisfying corrective action requirements.
13	200-ZP-1 ROD (EPA et al., 2008) WAC 173-350-300 only: 200-UP-1 interim ROD (EPA et al., 2012); 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021); ERDF ESD (EPA and DOE, 2015)	WAC 173-350-300, WAC 173-304-190, WAC 173-304-200[2], WAC 173-304-460, RCW 70.95	Establishes requirements for the onsite storage of solid waste that is not radioactive or dangerous wastes. Establishes the requirements for managing temporary storage of solid waste in onsite containers and the collection and transportation of solid waste.	Solid waste generated will be stored onsite and managed in leak-proof containers that meet the substantive requirements of this standard. IDW and remediation waste solid wastes onsite will meet the substantive requirements of this standard.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2). The IDW and remediation waste solid wastes stored onsite will be managed to meet the requirements of this standard. Wastes destined for solid waste landfills shall also meet applicable requirements. Nondangerous waste storage areas will be inspected monthly or at the frequency defined in the waste control plan that was developed for IDW.  200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2). Nondangerous solid wastes will be accumulated in safe and sanitary containers and will be inspected monthly or at the frequency defined in the waste control plan.  Waste accumulation, staging, storage, profile, packaging, and labeling details for each waste are documented on the WPLIS.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
14	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39)	WAC 173-400-040, WAC 173-400-113	Requires all sources of air contaminants to meet emission standards for visible, particulate, fugitive, odors, and hazardous air emissions. Requires the use of reasonably available control technology. This state regulation is as (or more) stringent than the equivalent federal program requirement.	Emission control equipment will meet the substantive requirements of these standards. The emission control equipment for radionuclides includes IX columns to remove technetium-99, iodine-129, and uranium.  The DOE guide (DOE/RL-2006-29, <i>Calculating Potential to Emit Radionuclide Releases and Doses</i> ) was used to calculate the unabated release potential for radiological constituents. Modeled results show that potential radionuclide emissions are determined to be from a minor source as described in WAC 246-247.	As described in the 200 West P&T air monitoring plan (DOE/RL-2009-124-ADD3) and the 200 West P&T SAP (DOE/RL-2009-124-ADD4), quarterly sampling for annual determination of compliance with SQERs and ASILs will be performed. Additional modeling to confirm compliance with ASILs will be completed if emissions exceed calculated/modeled values.
15	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-460-030, WAC 173-460-060, WAC 173-460-070	Requires that new sources of air emissions meet emission requirements. The owner/operator of a new toxic air pollutant source that is likely to increase toxic air pollutant emissions shall demonstrate that emissions from the source are sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects.	Emission control equipment to ensure air toxics emission standards are not exceeded include the following: <ul style="list-style-type: none"> <li>Anaerobic fluidized bed bioreactor for removal of nitrate, metals, and carbon tetrachloride.</li> <li>Aerobic membrane bed reactor for removal of residual carbon substrate, total suspended solids, biomass, and carbon tetrachloride.</li> <li>Packed bed tower air stripper to remove remaining carbon tetrachloride and other volatile organic compounds.</li> <li>Off-gas from the air stripper, fluidized bed reactor, membrane bed reactor, and sludge thickener will be comingled and treated by granular activated carbon prior to discharge via powered exhaust.</li> <li>Biomass sludge will be treated with lime to reduce odors and ammonia; a scrubber will be used to remove ammonia.</li> </ul>	As described in the 200 West P&T air monitoring plan (DOE/RL-2009-124-ADD3), quarterly sampling will be performed for annual determination of compliance with SQERs and ASILs. Additional modeling to confirm compliance with ASILs would be completed if emissions exceed calculated/modeled values.
16	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 OU ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34)	WAC 173-480-050[1], WAC 173-480-070[2]	Radionuclide emission control units are required to meet the emission standards identified in WAC 246-247 (as applicable). Requires every reasonable effort to maintain radioactive materials in effluents to unrestricted areas ALARA. Control equipment of facilities operating under ALARA shall be defined as reasonably achievable control technology.  Requires compliance with the public dose standard by calculating exposure (in curies) at maximum point of exposure and compare to public dose standard.	OU emission control equipment to ensure that radiation emission standards are not exceeded includes IX columns to remove technetium-99 and uranium.  The DOE guide (DOE/RL-2006-29) was used to calculate the unabated release potential for radiological constituents. Modeled results show that potential radionuclide emissions are determined to be from a minor source per WAC 246-247.	Periodic confirmatory measurements as described in the 200 West P&T air monitoring plan (DOE/RL-2009-124-ADD3) will be used to confirm emissions do not exceed criteria. Measurements consist of engineering calculations combined with the results of <i>Near-Facility Environmental Monitoring Quality Assurance Project Plan</i> (HNF-EP-0538-11, dated June 2008). Existing near-facility monitoring network will be used with monitoring locations added if needed.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
17	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) MSU Purgewater AM (DOE/RL-2009-39)	WAC 246-247-035[1][a][ii]	Incorporates the requirements of 40 CFR 61, Subpart H by reference. Requires that emissions of radionuclides to the ambient air from DOE facilities shall not exceed amounts that would cause any member of the public to receive, in any year, an effective dose equivalent of greater than 10 mrem/yr.	Emission control equipment will meet the substantive requirements of these standards. The emission control equipment for radionuclides includes IX columns to remove technetium-99 and uranium.	The 200 West P&T air monitoring plan (DOE/RL-2009-124-ADD3) has results that show control equipment is consistent with applicable best or reasonably achieved control technologies. The DOE guide (DOE/RL-2006-29) was used to calculate the unabated release potential for radiological constituents. The modeled results show that potential radionuclide emissions are determined be from a minor source per WAC 246-247. Periodic confirmatory measurement will be used to monitor radiological emissions that consist of engineering calculations combined with the results of HNF-EP-0538-11, which are summarized in an annual environmental monitoring report. Notification will be provided to EPA in the event any air sample that exceeds 10% of the values listed in Table 2 of Appendix E in 40 CFR 61, as measured in the Hanford Site near-facility ambient air monitors.
18	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-071	Describes those categories of wastes that are excluded from the requirements of WAC 173-303 (excluding WAC 173-303-050) because they are generally not dangerous or are regulated under other state and federal programs or are recycled in ways that do not threaten public health or the environment.	Wastes generated from remedial and removal actions will be reviewed against the categories identified in WAC 173-303-071.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
19	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-073	Establishes the conditional exclusions and the management requirements of special wastes, as defined in WAC 173-303-040.	IDW and remediation waste generated during the remedial actions will be reviewed against these exclusions.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
20	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-077	Identifies those wastes exempted from regulation under WAC 173-303-140 and WAC 173-303-170 through WAC 173-303-9906 (excluding WAC 173-303-960). These wastes are subject to regulation under WAC 173-303-573.	IDW and remediation waste generated from the remedial and removal actions will be reviewed against universal waste criteria and will comply with the substantive requirements provided in WAC 173-303-573.	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.
21	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-120[3] and [4]	These regulations define the requirements for recycling materials that are solid and dangerous waste. Specifically, WAC 173-303-120(3) provides for the management of certain recyclable materials.	IDW and remediation waste generated from the remedial and removal actions will be reviewed against the requirements for recyclable materials. If recyclable materials are generated, the material will be managed according to the substantive requirements of WAC 173-303-120(3).	200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2) designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS.

Table 2. Identification of ARARs for the 200 West P&T

Line #	Source Documents	ARAR	Requirement	Compliance Methodology	Comments
22	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 173-303-140[4]	Establishes state standards for land disposal of dangerous waste and incorporates, by reference, the federal restrictions of 40 CFR 268 that are relevant and appropriate to solid waste that is designated as dangerous or mixed waste. The requirements prohibit the placement of restricted RCRA hazardous waste in land-based units such as landfills, surface impoundments, and waste piles until treated to standards considered protective for disposal. Specific treatment standards are included in requirements.	Remediation waste and IDW dangerous waste destined for onsite land disposal will be managed in accordance with these restrictions.	Treatment residuals disposal/treatment occurs on an as-needed basis and will follow applicable waste management functions identified in the 200 West P&T and 200-ZP-1 WMP (DOE/RL-2009-124-ADD2). Waste designation and corresponding waste profiles are completed by the waste management lead. The waste profiles are documented on the WPLIS. Waste acceptance criteria for disposal at ERDF including LDRs are provided in ERDF-00011, Rev. 1, <i>Environmental Restoration Disposal Facility Waste Acceptance Criteria</i> .
23	200-ZP-1 ROD (EPA et al., 2008) 200-UP-1 interim ROD (EPA et al., 2012) 200-BP-5/200-PO-1 interim ROD (EPA et al., 2021) 200-DV-1 OU AM (DOE/RL-2014-34) MSU Purgewater AM (DOE/RL-2009-39) ERDF ESD (EPA and DOE, 2015)	WAC 246-247-040[3] and [4], WAC 246-247-075, specific subsections as listed in decision documents	Requires that emissions be controlled to ensure that radiation emission standards are not exceeded from new construction and existing sources. Establishes monitoring, testing, and quality assurance requirements for emissions.	Emission control equipment will meet the substantive requirements of these standards. The emission control equipment for radionuclides includes IX columns to remove technetium-99, iodine-129, and future removal of uranium.	Periodic confirmatory measurement, as described in the 200 West P&T SAP (DOE/RL-2009-124-ADD4), will be used to confirm emissions do not exceed criteria. Measurements consist of engineering calculations combined with HNF-EP-0538-11, which is summarized in an annual environmental monitoring report. The existing near-facility monitoring network will be used. Monitoring locations will be added if needed.

Note: The references cited in this table are provided in Chapter 2 of this addendum. The acronyms used in this table are included in the Acronym list located in the front matter of this addendum.

## 2 References

- 1
- 2 40 CFR 61, “National Emission Standards for Hazardous Air Pollutants,” *Code of Federal Regulations*.  
3 Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-61>.
- 4 Subpart H, “National Emission Standards for Emissions of Radionuclides Other Than Radon  
5 from Department of Energy Facilities.”
- 6 40 CFR 141, “National Primary Drinking Water Regulations,” *Code of Federal Regulations*. Available at:  
7 <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141>.
- 8 141.61, “Maximum Contaminant Levels for Organic Contaminants.”  
9 141.62, “Maximum Contaminant Levels for Inorganic Contaminants.”  
10 141.66, “Maximum Contaminant Levels for Radionuclides.”
- 11 40 CFR 268, “Land Disposal Restrictions,” *Code of Federal Regulations*. Available at:  
12 <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-268>.
- 13 40 CFR 300.430, “National Oil and Hazardous Substances Pollution Contingency Plan,” “Remedial  
14 Investigation/Feasibility Study and Selection of Remedy,” *Code of Federal Regulations*.  
15 Available at: [https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-300#40:28.0.1.1.1.5.1.7)  
16 [300#40:28.0.1.1.1.5.1.7](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-300#40:28.0.1.1.1.5.1.7).
- 17 43 CFR 10, “Native American Graves Protection and Repatriation Regulations,” *Code of Federal*  
18 *Regulations*. Available at: [https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-300#40:28.0.1.1.1.5.1.7)  
19 [300#40:28.0.1.1.1.5.1.7](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-J/part-300#40:28.0.1.1.1.5.1.7).
- 20 50 CFR 402, “Interagency Cooperation—Endangered Species Act of 1973, as Amended,” *Code of*  
21 *Federal Regulations*. Available at: [https://www.govinfo.gov/content/pkg/CFR-2009-title50-](https://www.govinfo.gov/content/pkg/CFR-2009-title50-vol7/xml/CFR-2009-title50-vol7-part402.xml)  
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Attachment 2  
25-SGD-0057

Waste Management Plan for the 200 West Pump and Treat  
and the 200-ZP-1 Operable Unit  
DOE/RL-2009-124-ADD2, Draft A

(33 pages including cover sheet)

# Waste Management Plan for the 200 West Pump and Treat and the 200-ZP-1 Operable Unit

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

 U.S. DEPARTMENT OF **ENERGY** | Richland Operations Office  
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**APPROVED**  
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Release Approval

Date

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## Contents

<b>1</b>	<b>Purpose .....</b>	<b>1</b>
<b>2</b>	<b>Waste Generation Activities and Projected Waste Streams .....</b>	<b>9</b>
<b>3</b>	<b>Waste Management Requirements.....</b>	<b>10</b>
3.1	Waste Generation.....	10
3.2	Waste Packaging and Labeling .....	10
3.3	Waste Storage.....	10
3.4	Waste Designation .....	12
3.5	Waste Disposal.....	15
3.6	Records .....	15
<b>4</b>	<b>Stream-Specific Waste Management Requirement .....</b>	<b>15</b>
4.1	Loaded and Spent Granular-Activated Carbon.....	15
4.2	Spent Ion-Exchange Resins .....	16
4.3	Filter Elements.....	17
4.4	Drill Cuttings .....	17
4.5	Liquids .....	17
4.5.1	Purgewater .....	17
4.5.2	Water Drained from Granular-Activated Carbon and Resin Roll-Off Boxes .....	18
4.5.3	Algae Removal Liquids .....	18
4.5.4	Decontamination Fluids.....	18
4.5.5	Sample Analysis and Screening Liquids .....	18
4.5.6	Liquids from Unplanned Releases .....	18
4.6	Incidental Solid Waste .....	18
4.7	Miscellaneous Solid Waste.....	19
4.8	Decommissioning Debris .....	19
4.9	Spent or Expired Chemicals/Reagents and Used Oil .....	19
4.10	Sampling-Related Waste .....	19
4.11	Treatability Test Waste.....	20
4.12	Environmental Restoration Disposal Facility Leachate.....	20
4.13	Modular Storage Unit Purgewater .....	20
<b>5</b>	<b>References .....</b>	<b>20</b>

## Figures

Figure 1.	200 West Groundwater Monitoring Well Locations .....	7
Figure 2.	Extraction and Injection Well Locations with Conveyance Pipe Routing for the 200 West P&T (as of July 2025) .....	8
Figure 3.	200 West P&T Waste Facility Area .....	11
Figure 4.	200-ZP-1 OU Waste Storage Location .....	13
Figure 5.	6265A Building Location.....	14

## Tables

Table 1.	200 Area Monitoring Wells .....	3
Table 2.	Extraction and Injection Wells Associated with the 200-ZP-1 OU Remedy .....	4
Table 3.	Authorized Limits for Offsite Transfer of 200 West P&T GAC .....	16

## Acronyms

ARAR	applicable or relevant and appropriate requirement
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
GAC	granular-activated carbon
IDW	investigation-derived waste
IX	ion exchange
MSU	modular storage unit
MSW	miscellaneous solid waste
O&M	operations and maintenance
OU	operable unit
P&T	pump and treat
ROD	record of decision
SAP	sampling and analysis plan
WMP	waste management plan

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## 1 Purpose

This waste management plan (WMP) establishes the requirements for the management and disposal of investigation-derived waste (IDW) and remediation waste associated with the 200-ZP-1 Groundwater Operable Unit (OU) and operation of the 200 West pump and treat (P&T).

The 200 West P&T was constructed to capture and treat contaminated groundwater in the 200-ZP-1 OU, as required by EPA et al., 2008, *Record of Decision, Hanford 200 Area, 200-ZP-1 Superfund Site, Benton County, Washington* (hereinafter referred to as the 200-ZP-1 OU record of decision [ROD]). Since issuance of the 200-ZP-1 OU ROD in 2008, decisions were approved to treat other sources of water at the 200 West P&T, including the following:

- 200-UP-1 OU groundwater, as described in EPA et al., 2012, *Record of Decision for Interim Remedial Action, Hanford 200 Area Superfund Site, 200-UP-1 Operable Unit* (hereinafter referred to as the 200-UP-1 OU interim ROD)
- 200-BP-5 OU and 200-PO-1 OU groundwater, as described in EPA et al., 2021, *Interim Record of Decision for Hanford 200 Area Superfund Site 200-BP-5 and 200-PO-1 Operable Units* (hereinafter referred to as the 200-BP-5 OU and 200-PO-1 OU interim ROD)
- 200-DV-1 OU perched water, as described in DOE/RL-2014-34, *Action Memorandum for 200-DV-1 Operable Unit Perched Water Pumping/Pore Water Extraction*
- Environmental Restoration Disposal Facility (ERDF) leachate, as described in EPA and DOE, 2015, *Explanation of Significant Differences for the U.S. Department of Energy Environmental Restoration Disposal Facility Hanford Site – 200 Area Benton County, WA*
- Modular storage unit (MSU) purgewater, as described in DOE/RL-2009-39, *Investigation-Derived Waste Purgewater Management Action Memorandum*, as amended by TPA-CN-0841, *Tri-Party Agreement Change Notice Form: DOE/RL-2009-39, Investigation-Derived Waste Purgewater Management Action Memorandum, Rev. 0*

The 200 West P&T extracts groundwater from a network of extraction wells and then treats the contaminated groundwater to reduce the mass of carbon tetrachloride, total chromium,<sup>1</sup> hexavalent chromium, nitrate, trichloroethene, technetium-99, and uranium within the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 groundwater OUs, 200-DV-1 OU perched water, leachate from ERDF, and MSU purgewater.<sup>2</sup> Following treatment, the water is reinjected into the aquifer through a network of injection wells.

Waste generated during 200 West P&T remedial activities (i.e., during the processing, sampling, and treatment of contaminated groundwater at the 200 West P&T facility) is considered remediation waste associated with 200 West P&T operations and is managed in accordance with this WMP and the substantive portions of the applicable or relevant and appropriate requirements (ARARs) in DOE/RL-2009-124-ADD1, *Compliance Matrix for the 200 West Pump and Treat Operations and Maintenance Plan*. The 200 West P&T compliance matrix summarizes the list of ARARs as identified in the 200-ZP-1 OU ROD (EPA et al., 2008), the 200-UP-1 OU interim ROD (EPA et al., 2012), the 200-BP-5 OU and 200-PO-1 OU interim ROD (EPA et al., 2021), the 200-DV-1 OU action memorandum (DOE/RL-2014-34), the MSU purgewater action memorandum (DOE/RL-2009-39), and the ERDF explanation of significant differences (EPA and DOE, 2015) for ERDF leachate. Additional details on the

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<sup>1</sup> Total chromium refers to the combined amount of all the forms of chromium, including trivalent and hexavalent.

<sup>2</sup> Chromium and nitrate were originally removed through the 200 West P&T biological treatment system. Biological treatment was suspended in 2019 per DOE/RL-2019-38, *200-ZP-1 Operable Unit Optimization Study Plan*. A future decision regarding whether biological treatment will resume or be permanently suspended is pending. Incidental recovery of chromium through the ion-exchange resins does occur.

Iodine-129 is required to be treated as stated in the 200-ZP-1 OU ROD (EPA et al., 2008), but is not treated because there is no currently viable treatment technology. Incidental recovery of iodine-129 through the ion-exchange resins does occur.

1 operations and decision documents associated with the 200 West P&T are in DOE/RL-2009-124, Rev. 6,  
2 *200 West Pump and Treat Operations and Maintenance Plan*.

3 In addition to remediation waste associated with 200 West P&T operations, this WMP includes the  
4 requirements for the management and disposal of remediation waste and IDW (e.g., drill cuttings)  
5 generated from the installation, monitoring, sampling, maintenance, and decommissioning of wells in the  
6 200-ZP-1 OU<sup>3</sup> in accordance with DOE/RL-2011-41, *Hanford Site Strategy for Management of*  
7 *Investigation Derived Waste*. IDW and remediation waste generated from 200-ZP-1 OU activities are  
8 subject to the requirements of this WMP and are associated with activities implemented in connection with  
9 the following documents:

- 10 • EPA et al., 2008, *Record of Decision, Hanford 200 Area, 200-ZP-1 Superfund Site, Benton County,*  
11 *Washington*
- 12 • DOE/RL-2008-78, *200 West Area 200-ZP-1 Pump-and-Treat Remedial Design/Remedial Action Work*  
13 *Plan*
- 14 • DOE/RL-2009-115, *Performance Monitoring Plan for the 200-ZP-1 Groundwater Operable Unit*  
15 *Remedial Action*, and Appendix B of DOE/RL-2009-115
- 16 • DOE/RL-2009-124-ADD4, *200 West Pump and Treat Sampling and Analysis Plan*, hereinafter  
17 referred to as the 200 West P&T sampling and analysis plan (SAP)
- 18 • DOE/RL-2019-38, *200-ZP-1 Operable Unit Optimization Study Plan*

19 The requirements for the management and disposal of IDW or remediation waste from the 200-UP-1,  
20 200-BP-5, and 200-PO-1 groundwater OUs; the 200-DV-1 source OU; ERDF leachate; and MSU  
21 purgewater are not included within this document and are found in the following documents:

- 22 • DOE/RL-2016-13, *Waste Management Plan for the 200-UP-1 Groundwater Operable Unit*
- 23 • DOE/RL-2022-14, *Waste Management Plan/Waste Control Plan for the 200-BP-5 and*  
24 *200-PO-1 Groundwater Operable Units*
- 25 • DOE/RL-2012-20, *Waste Control Plan for the 200-DV-1 Operable Unit*
- 26 • CP-60072, *Environmental Restoration Disposal Facility Leachate and Washwater Management Plan,*  
27 *Formerly WCH-182, Revision 3*
- 28 • DOE/RL-2009-39, *Investigation-Derived Waste Purgewater Management Action Memorandum*

29 Monitoring wells and extraction and injection wells associated with the 200-ZP-1 OU remedy are listed in  
30 Tables 1 and 2, respectively. The well lists include select wells from the 200-UP-1 OU that may be used  
31 to monitor or remediate carbon tetrachloride in conjunction with the 200-ZP-1 OU remedy. Monitoring  
32 wells associated with the 200-ZP-1 OU remedy are shown in Figure 1. Figure 2 shows all of the extraction  
33 and injection wells associated with the 200 West P&T. If additional wells are identified to support  
34 groundwater monitoring or remediation activities for the 200-ZP-1 OU, this WMP will be  
35 updated accordingly.

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<sup>3</sup> Although located in the 200-UP-1 OU, extraction and injection wells that may be used to monitor or remediate carbon tetrachloride in conjunction with the 200-ZP-1 OU remedy are included in Table 2 and are subject to this WMP.

**Table 1. 200 Area Monitoring Wells**

Well Name			
299-W5-2	299-W11-99	299-W18-264	699-35-66A
299-W6-3	299-W11-100	299-W19-4	699-35-78A
299-W6-6	299-W13-1	299-W19-6	699-36-61A
299-W6-11	299-W13-2	299-W19-18	699-36-66B
299-W6-12	299-W13-3	299-W19-34A	699-36-70A
299-W6-17	299-W13-4	299-W19-34B	699-36-70B
299-W7-3	299-W14-11	299-W19-36	699-37-66
299-W7-15	299-W14-13	299-W19-41	699-38-61
299-W7-16	299-W14-14	299-W19-47	699-38-65
299-W9-2	299-W14-16	299-W19-48	699-38-68A
299-W10-1	299-W14-17	299-W19-49	699-38-70B
299-W10-14	299-W14-18	299-W19-105	699-38-70C
299-W10-26	299-W14-24	299-W19-107	699-40-62
299-W10-27	299-W14-25	299-W19-115	699-40-65
299-W10-29	299-W14-71	299-W19-116	699-43-69
299-W10-30	299-W14-72	299-W19-126	699-44-64
299-W10-31	299-W15-7	299-W19-131	699-44-70B
299-W10-33	299-W15-11	299-W19-133	699-44-70C
299-W10-40	299-W15-17	299-W20-1	699-45-65
299-W10-41	299-W15-30	299-W21-2	699-45-67C
299-W10-42	299-W15-33	299-W22-47	699-45-69A
299-W10-201	299-W15-37	299-W22-72	699-45-69C
299-W10-202	299-W15-42	299-W22-83	699-46-61
299-W10-203	299-W15-44	299-W22-86	699-46-61B
299-W10-204	299-W15-46	299-W22-87	699-46-70
299-W10-205	299-W15-49	299-W22-88	699-47-60
299-W10-206	299-W15-50	299-W22-94	699-48-71
299-W10-207	299-W15-83	299-W22-95	699-48-77C
299-W11-13	299-W15-94	299-W22-113	699-48-77D
299-W11-18	299-W15-152	299-W23-4	699-48-96
299-W11-33Q	299-W15-224	299-W23-19	699-49-79
299-W11-41	299-W15-763	299-W23-21	699-49-100C
299-W11-43	299-W15-765	299-W26-13	699-50-74
299-W11-45	299-W18-1	299-W27-2	699-51-75
299-W11-47	299-W18-15	699-30-66	699-51-63

**Table 1. 200 Area Monitoring Wells**

Well Name			
299-W11-48	299-W18-16	699-32-62	699-55-76
299-W11-87	299-W18-21	699-32-72A	—
299-W11-88	299-W18-22	699-33-75	—
299-W11-98	299-W18-40	699-34-61	—

1

**Table 2. Extraction and Injection Wells Associated with the 200-ZP-1 OU Remedy**

Well Code	Well Identification	Well Name
<b>Extraction Wells</b>		
YE-1	C7017	299-W15-225
YE-2	C7018	299-W14-20
YE-3	C7021	299-W14-73
YE-4	C7024	299-W14-74
YE-5	C7027	299-W12-2
YE-6	C7020	299-W11-50
YE-7	C7022	299-W11-90
YE-8	C7754	299-W11-96
YE-9	C7577	299-W17-3
YE-10	C7576	299-W17-2
YE-11	D0138	299-W14-31
	C8718*	299-W19-111*
YE-12	C7019	299-W11-49
YE-13	C8719	299-W11-97
YE-14	C8720	299-W6-15
YE-15	C7494	299-W14-21
YE-16	C7025	299-W11-92
YE-17	C8721	299-W5-1
YE-18	C7028	299-W12-3
YE-19	C7029	299-W12-4
YE-20	C7030	299-W14-22
YE-33	C9988	699-48-70
YE-34	D0368	299-W11-106
YE-35	D0131	299-W12-5
YE-36	D0369	299-W11-107
YE-37	D0371	299-W13-5
YE-38	D0370	299-W14-75

**Table 2. Extraction and Injection Wells Associated with the 200-ZP-1 OU Remedy**

Well Code	Well Identification	Well Name
YE-39	D0138	299-W14-29
YE-40	D0139	299-W14-32
YE-41	D0141	699-40-7A
YE-42	D0137	299-W14-30
YE-43	D0135	299-W14-28
YE-50	D0473	299-W12-6
YE-51	D0474	299-W11-116
YE-47	D0314	299-W11-117
YE-48	D0315	299-W11-118
YE-49	D0316	299-W14-35
TBD	D0317	299-W11-119
TBD	D0318	299-W14-82
TBD	D0475	TBD
TBD	D0477	TBD
TBD	D0496	TBD
Injection Wells		
YJ-1	C8064	299-W6-13
YJ-2	C8065	299-W6-14
YJ-3	C8066	299-W10-36
YJ-4	C7573	299-W10-35
YJ-5	C7574	299-W15-226
YJ-6	C7575	299-W15-227
YJ-7	C8716	299-W15-228
YJ-8	C8920	299-W18-41
YJ-9	C8786	699-49-69
YJ-10	C8717	699-45-67B
YJ-11	C7578	699-45-67
YJ-12	C8068	699-44-67
YJ-13	C7579	699-43-67
YJ-14	C8069	699-42-67
YJ-15	C8070	699-40-67
YJ-16	C8921	699-38-64
YJ-17	C8386	699-43-67B
YJ-18	B2409	299-W15-29
YJ-19	B2747	299-W18-36

**Table 2. Extraction and Injection Wells Associated with the 200-ZP-1 OU Remedy**

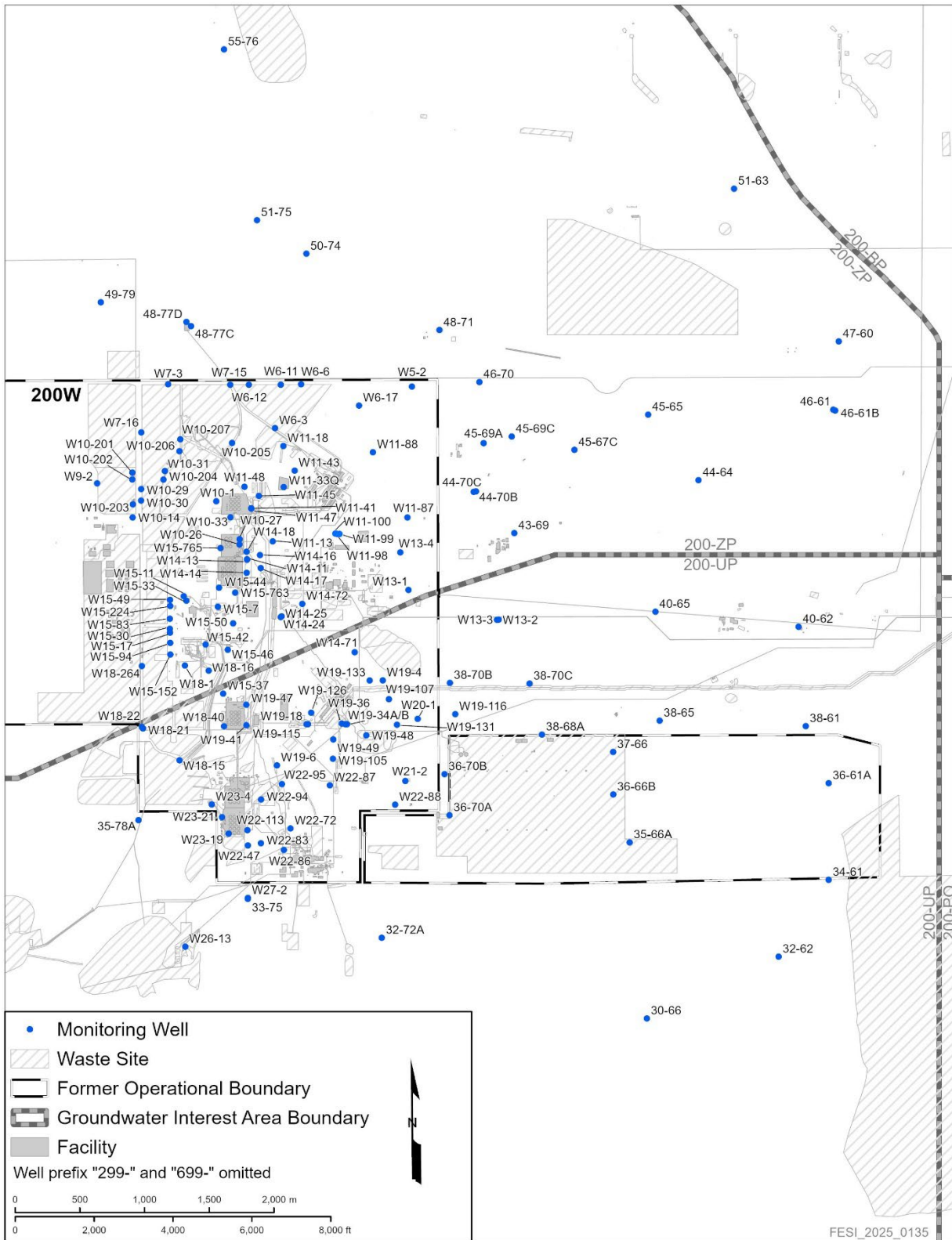
Well Code	Well Identification	Well Name
YJ-21	B2757	299-W18-38
YJ-22	B2758	299-W18-39
YJ-23	C8067	699-46-68
YJ-24	C8944	299-W15-229
YJ-25	C9521	299-W7-14
YJ-26	C9482	299-E20-1
YJ-27	C9483	299-E20-2
YJ-28	C9484	299-E11-1
YJ-29	C9561	299-W6-16
YJ-30	C9565	299-W18-44
YJ-31	C9564	299-W18-43
YJ-32	C9563	299-W18-42
YJ-33*	C9878	699-47-78
YJ-34	C9880	699-47-78C
YJ-35*	C9879	699-47-78B

Note: Although located in the 200-UP-1 Operable Unit (OU), extraction and injection wells that may be used to monitor or remediate carbon tetrachloride in conjunction with the 200-ZP-1 OU remedy are included in Table 2 and are subject to this waste management plan. The 200-UP-1 OU extraction wells near Waste Management Area S-SX and U Plant are subject to DOE/RL-2016-13, *Waste Management Plan for the 200-UP-1 Groundwater Operable Unit*.

\*Offline well as of March 2026.

TBD: to be determined

1  
 2



1  
2

Figure 1. 200 West Groundwater Monitoring Well Locations

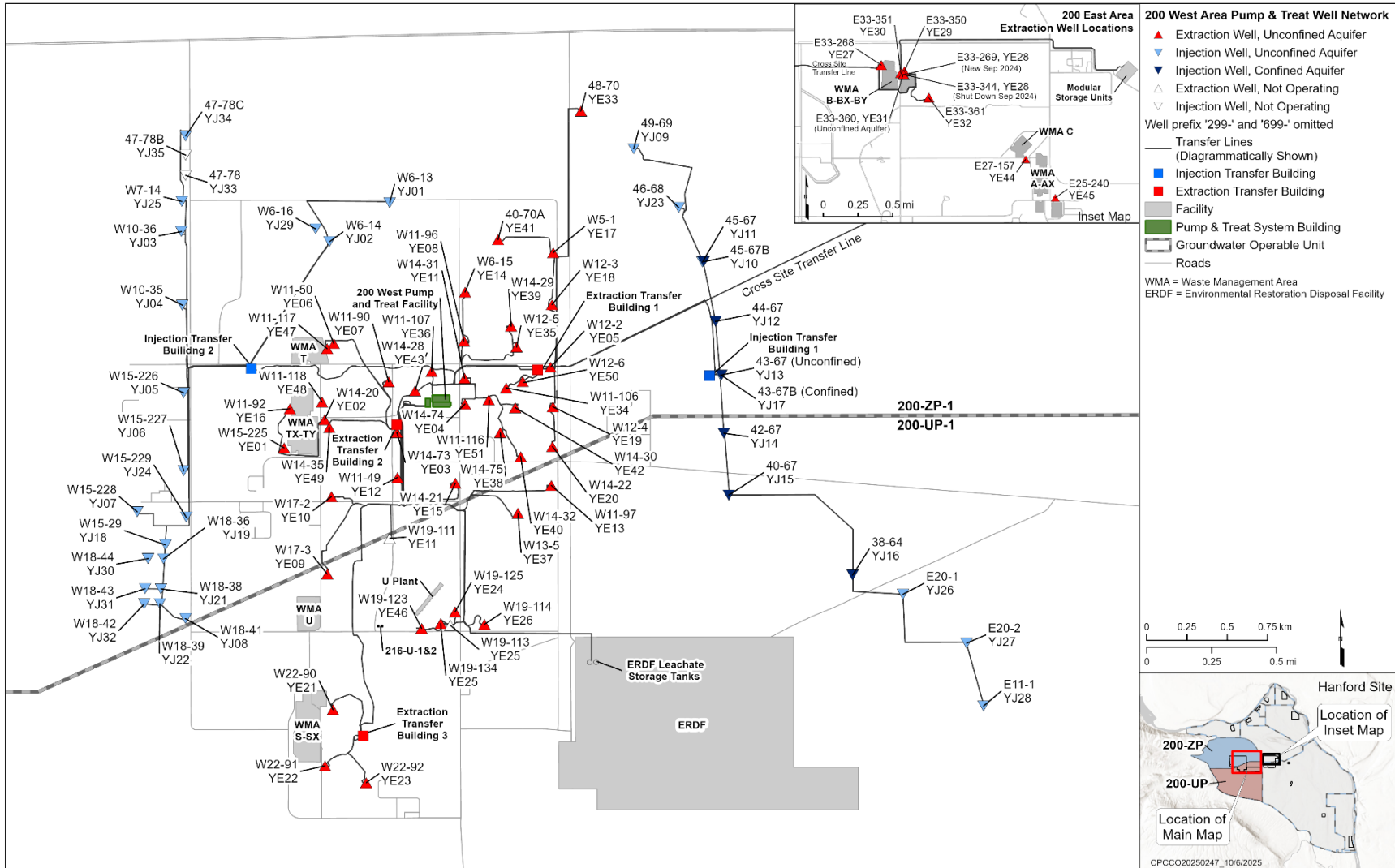


Figure 2. Extraction and Injection Well Locations with Conveyance Pipe Routing for the 200 West P&T (as of July 2025)

1  
 2  
 3

## 2 Waste Generation Activities and Projected Waste Streams

The following investigation and remediation activities associated with the 200-ZP-1 OU and 200 West P&T operations are expected to generate waste subject to the requirements of this WMP:

- Construction, modification, and operations and maintenance (O&M) of the 200 West P&T
- Installation, development, testing, monitoring, sampling, O&M, and decommissioning of groundwater monitoring, extraction, and injection wells
- Subsurface characterization activities, including water level and other in situ groundwater or vadose zone measurements
- Aquifer testing and geophysical logging
- Treatability studies
- Decontamination of equipment, tools, and material
- Process sampling and analysis of samples

The following waste streams are generated from the activities described above:

- Loaded and spent granular-activated carbon (GAC), ion-exchange (IX) resin, sludge, and filter elements (loaded GAC has reached its sorption capacity, is in good physical condition, and can be regenerated; spent GAC has reached its sorption capacity and cannot be regenerated)
- Biosolids
- Off-specification in-process groundwater
- Drill cuttings (vadose and saturated zone soil)
- Miscellaneous solid waste (MSW) (e.g., paper, wipes, personal protective equipment, cloth, tools, syringes, pumps, metal, glass, and plastic)
- Decommissioning debris (e.g., concrete, wood, rebar, metal or plastic pipe and screens, wire, bentonite, sand, gravel, equipment, pumps, and tanks)
- Replaced treatment system components (e.g., air-stripper tower packing, vessels, valves, and piping)
- Equipment and construction materials (e.g., well casing, drill strings, drive barrels, construction equipment and material, sampling equipment, and wooden pallets)
- Spent or expired chemicals, reagents, and used oil
- Unplanned releases and associated cleanup material
- Liquids that may include, but are not limited to, the following:
  - Purgewater (including MSU purgewater) generated during well installation, development, testing, sampling, monitoring, maintenance, decommissioning, and decanting of saturated zone soil and water drained from GAC and resins
  - Algae treatment fluid
  - Decontamination fluid
  - Liquid from sample analysis and screening
  - Liquid from unplanned release
- Sampling-related waste from any field laboratory testing (if used), as well as other Hanford Site laboratory sample returns related to the 200-ZP-1 OU
- Treatability test waste in support of the 200 West P&T

### 3 Waste Management Requirements

IDW and remediation waste from the 200-ZP-1 OU and 200 West P&T operations will be managed in accordance with this WMP and substantive compliance with the ARARs, as identified in the 200-ZP-1 OU ROD (EPA et al., 2008). A compilation of the ARARs for the 200 West P&T are provided in the 200 West P&T compliance matrix (DOE/RL-2009-124-ADD1), which summarizes the requirements and compliance methodology for the ARARs identified in the decision documents listed in Chapter 1 of this WMP. Groundwater from the 200-UP-1, 200-BP-5, and 200-PO-1 OUs; 200-DV-1 OU perched water; MSU purgewater; and ERDF leachate is co-mingled and becomes process water at the 200 West P&T and will also be managed under this WMP. Every effort will be made to minimize waste generated from investigation and remediation activities.

#### 3.1 Waste Generation

All waste generated from 200-ZP-1 OU drilling activities and operation of the 200 West P&T will be managed in accordance with project procedures and/or waste planning documents.

#### 3.2 Waste Packaging and Labeling

Waste packaging and labeling are performed in accordance with a waste packaging and labeling instruction sheet, or as directed by the waste management specialist.

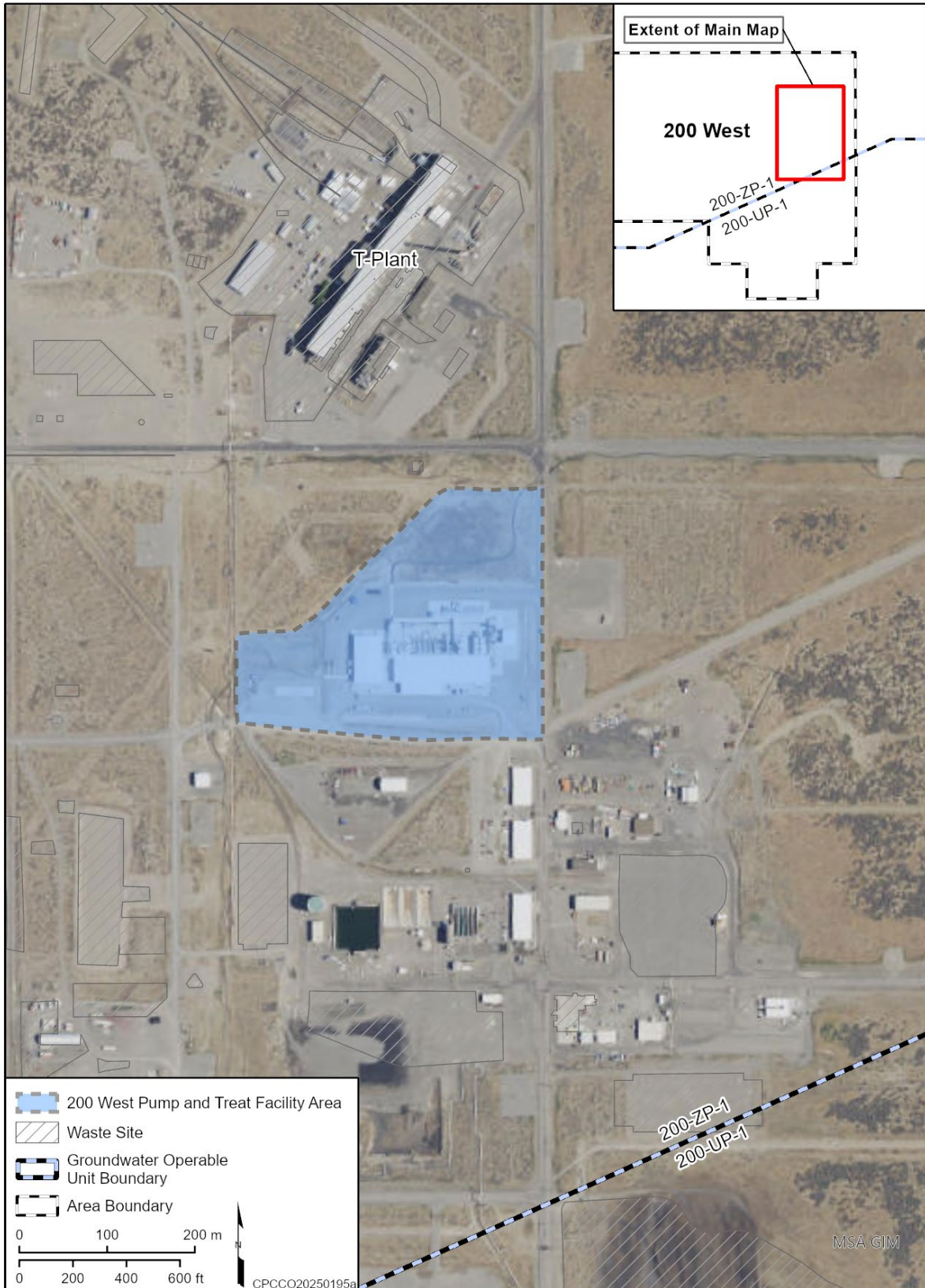
Packaging and labeling during storage and transportation will meet the substantive requirements of WAC 173-303, "Dangerous Waste Regulations," and WAC 173-304, "Minimum Functional Standards for Solid Waste Handling," which are identified in the 200-ZP-1 OU ROD (EPA et al., 2008) as being applicable, or relevant and appropriate. For onsite waste shipments, non-U.S. Department of Transportation packaging may be used if the container will provide an equivalent degree of safety and approval documents are in place. Materials requiring collection will be placed in containers appropriate for the material and the receiving facility. U.S. Department of Transportation-approved drums may be used for some materials (e.g., drill cuttings); however, packaging and containment for large or irregular waste or large volume waste (e.g., GAC and resin) may require containers other than drums. The packaging and containment may include but are not limited to plastic wrap, 4 ft by 4 ft by 8 ft boxes, ERDF roll-on/roll-off containers, and GAC canisters.

Waste generated from groundwater monitoring activities within the 200-ZP-1 OU (e.g., well sampling, well maintenance, well decommissioning, and geophysical logging) may be bagged, taped, and labeled with the well number and the date the waste was generated. The bagged material would be transported in a protective manner (i.e., containment of the material is maintained) while proceeding from well to well in the 200-ZP-1 OU. Waste bags will be placed in appropriate containers and stored at the established 200-ZP-1 OU storage location or other approved consolidated storage location, or may be disposed directly to ERDF without storage, as directed by the waste management specialist.

Containers will be labeled and marked appropriately to match the waste designation established for each waste stream. The containers will be sealed and shipped to the identified disposal facility or storage area.

#### 3.3 Waste Storage

Remediation waste (e.g., resin, sludge, spent GAC, bag filters, and MSW) destined for disposal, and loaded GAC for offsite regeneration or disposal, may be stored on the pad within the 200 West P&T facility area (Figure 3) for up to 1 year or longer with U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA) concurrence. Larger volumes of waste (e.g., from well redevelopment) may be stored at the respective well pad until disposal at ERDF.



1  
2

Figure 3. 200 West P&T Waste Facility Area

1 The 200-ZP-1 OU IDW (e.g., drill cuttings) may be accumulated near the point of generation while  
2 awaiting analytical laboratory test results. The 200-ZP-1 OU IDW may also be accumulated at the  
3 200-ZP-1 OU *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*  
4 (CERCLA) waste storage area (Figure 4). Waste from the 200-UP-1 OU may also be stored at the  
5 CERCLA waste storage area; however, the waste is kept segregated by OU and will not be co-mingled.  
6 If IDW must be stored for longer than 6 months after designation, concurrence from EPA will be obtained  
7 on storage, treatment, and disposal options of the waste, along with the disposition schedule.

8 Radioactive waste will be managed separately from nonradioactive waste. The containers bearing  
9 radioactive waste will be sealed, labeled, and shipped to the appropriate identified disposal facility in  
10 accordance with the criteria established for the respective material.

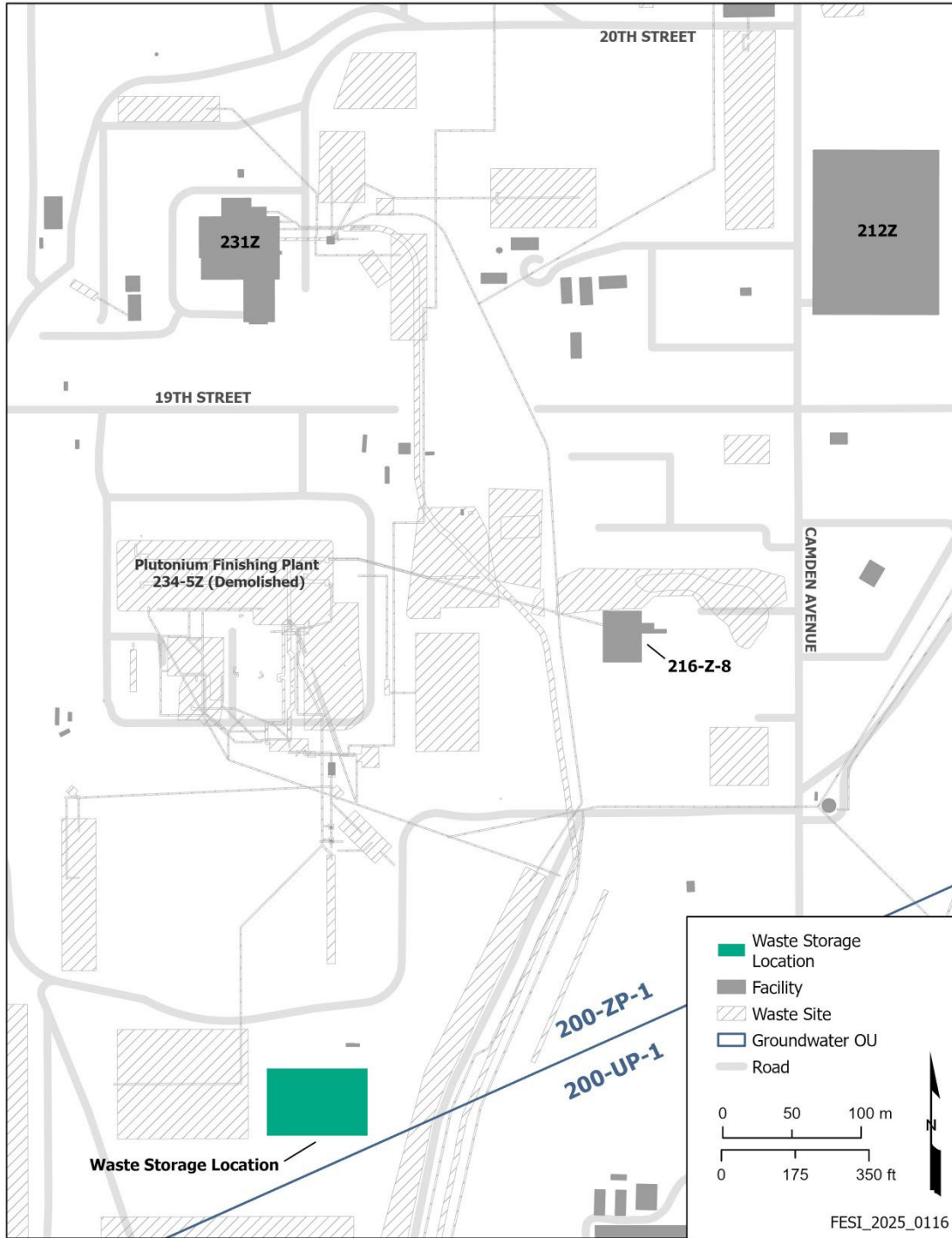
11 Segregation and staging of waste containers and packages will be performed in accordance with the  
12 waste packaging and labeling instruction sheet, or as directed by the waste management specialist.  
13 The amount of waste stored at the storage area should be kept to a minimum. Full containers should be  
14 prepared for disposal as quickly as economically feasible. Designated dangerous waste will be stored in  
15 defined storage areas. Designated dangerous waste and waste awaiting sampling, or pending analysis in  
16 defined storage areas, will be inspected weekly. Nondangerous waste storage areas will be inspected  
17 monthly or at the frequency directed by the Central Plateau remediation contractor's P&T operations or  
18 Soil and Groundwater Remediation Project operations. MSW will be collected when generated from the  
19 200-ZP-1 OU and may be transported and stored at the 6265A Building located in the Central Plateau  
20 (Figure 5). Waste stored at the 6265A Building will be segregated as appropriate. The collection,  
21 transport, and storage of the solid waste will be conducted in accordance with the ARARs. Once waste  
22 storage activities are completed, the substantive requirements of WAC 173-303-200, "Conditions for  
23 Exemption for a Large Quantity Generator That Accumulates Dangerous Waste," regarding closure will  
24 be followed.

### 25 **3.4 Waste Designation**

26 Waste will be designated in accordance with the substantive standards of WAC 173-303-070(3),  
27 "Designation of Dangerous Waste" using a combination of process knowledge, historical analytical data,  
28 and laboratory analyses. An extensive groundwater well network is in the 200-ZP-1 OU, and many years  
29 of characterization data have been obtained that can be used for waste designation. Groundwater  
30 associated with the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 OUs carry the following listed waste  
31 codes:

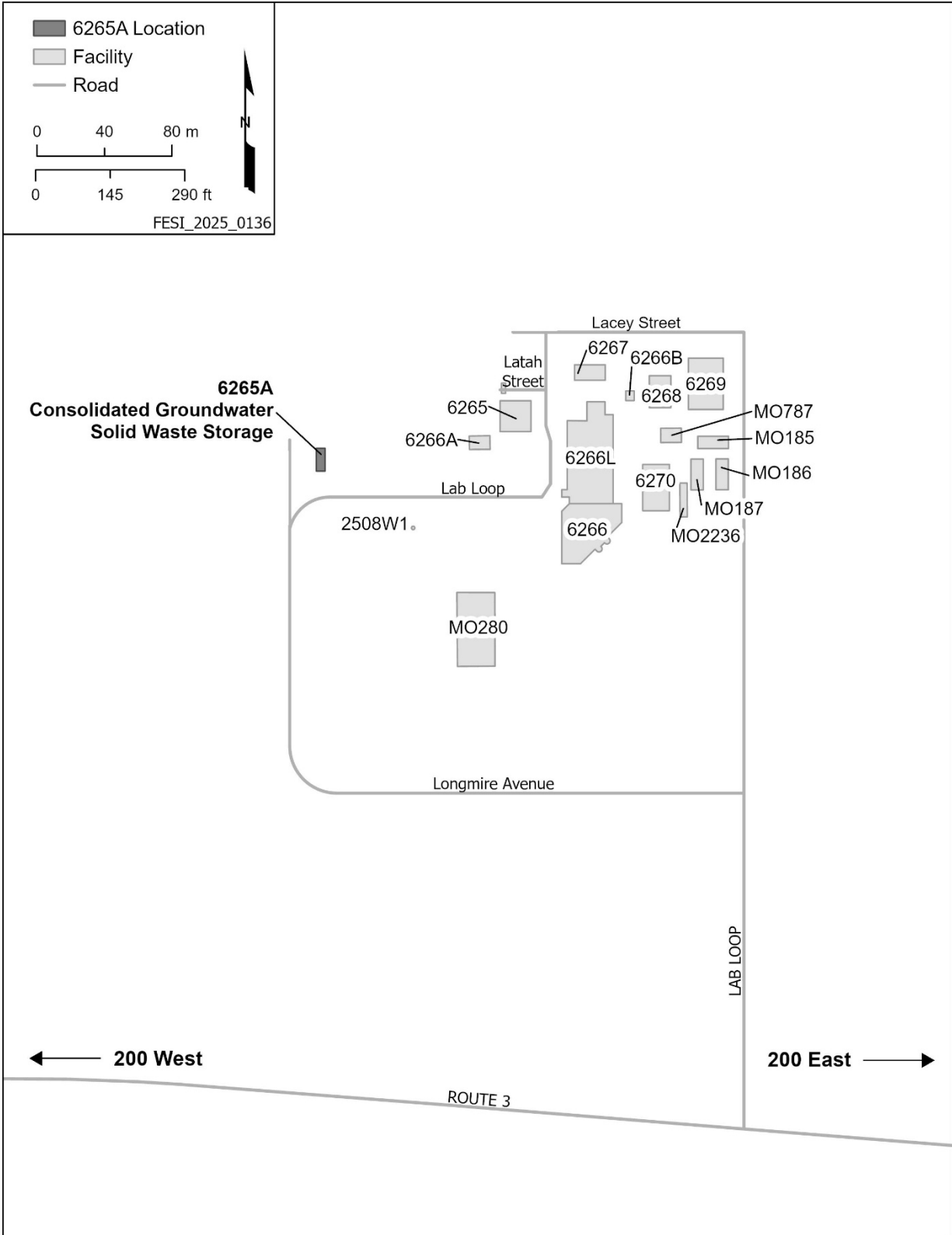
- 32 • **F001:** carbon tetrachloride and 1,1,1 trichloroethane
- 33 • **F002:** methylene chloride
- 34 • **F003:** acetone and methyl isobutyl ketone
- 35 • **F004:** cresols and cresylic acid (o-cresols and p-cresols)
- 36 • **F005:** methyl ethyl ketone

37 Therefore, IDW and remediation waste from the 200-ZP-1 OU and 200 West P&T operations that comes  
38 into contact with contaminated groundwater from the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 OUs  
39 will also carry "F001" through "F005" listed waste codes.



1  
2

Figure 4. 200-ZP-1 OU Waste Storage Location



1  
2

Figure 5. 6265A Building Location

### 3.5 Waste Disposal

IDW and remediation waste from the 200-ZP-1 OU and 200 West P&T operations may be disposed at ERDF if the waste meets the facility's waste acceptance criteria, as defined in ERDF-00011, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, and ERDF-00003, *Supplemental Waste Acceptance Criteria for the Environmental Restoration Disposal Facility*. Waste that does not meet ERDF waste acceptance criteria will be evaluated for additional treatment at an onsite or offsite facility. If additional treatment is deemed necessary, treatment options will be evaluated based on the characteristics of the waste and the concentration reduction requirements. If treatment options are not available, the waste may be managed within the Hanford Site Solid Waste Operations Complex (e.g., the Central Waste Complex), until an appropriate offsite disposal facility is identified and approved by EPA.

### 3.6 Records

Completed waste inventory documentation will be used to initiate waste tracking in the Solid Waste Information Tracking System. All records will be managed in accordance with applicable records management processes.

## 4 Stream-Specific Waste Management Requirement

Specific waste management guidance for each projected waste stream is provided in this chapter. Descriptions and sampling requirements for the process waste streams that require disposal (detailed below), including the sample locations, sample frequencies, and constituents to be analyzed, are provided in the 200 West P&T SAP (DOE/RL-2009-124-ADD4). Sampling in support of activities described in the 200 West P&T SAP and subject to this WMP are performed in accordance with appropriate technical procedures.

### 4.1 Loaded and Spent Granular-Activated Carbon

Loaded GAC may be sent offsite for regeneration at an EPA-approved facility and may be reused in the treatment system in accordance with 40 CFR 300.440, "National Oil and Hazardous Substances Pollution Contingency Plan," "Procedures for Planning and Implementing Off-Site Response Actions." The GAC sent offsite must meet the authorized limit requirements for the specific offsite facility.

Transfer of the GAC canisters to the offsite regeneration facility constitutes a release from DOE control. Therefore, before the GAC is sent to the regeneration facility, the potential for residual radioactive contamination on the GAC and demonstration of compliance with the requirements of DOE O 458.1, Admin Chg 5, *Radiation Protection of the Public and the Environment*, must be assessed. For any potential residual radioactive contamination, DOE O 458.1 requires that radiological release criteria (i.e., authorized limits) be developed and submitted to the applicable DOE field office. The following authorized limits are established low enough to ensure that the public dose limit of 100 mrem/yr is not approached. If any radionuclide listed in Table 3 is detected at an activity greater than the authorized limit shown in this table, then each canister or drum must be reanalyzed separately for that radionuclide to ensure that the authorized limit is not exceeded for the radionuclide in question.

If the loaded GAC canisters and drums cannot meet the authorized limits listed in Table 3, the GAC canisters may be disposed at ERDF if they meet the facility's waste acceptance criteria. GAC waste that does not meet ERDF waste acceptance criteria will be evaluated for additional treatment at an onsite or offsite facility. If treatment options are not available, the waste may be managed within the Hanford Site Solid Waste Operations Complex. Spent GAC will be similarly evaluated for ERDF disposal and additional treatment if necessary.

**Table 3. Authorized Limits for Offsite Transfer of 200 West P&T GAC**

Radionuclide	Authorized Limit (pCi/g)
Americium-241	29
Carbon-14	3,000
Cesium-137	80
Cobalt-60	21
Europium-152	40
Europium-154	40
Europium-155	700
Iodine-129	50
Neptunium-237	50
Nickel-63	100
Plutonium-231	10
Plutonium-238	26
Plutonium-239	24
Plutonium-240	24
Protactinium-231	10
Selenium-79	2,000
Strontium-90	100
Technetium-99	500
Thorium-232 + progeny	6
Tritium	300,000
Uranium-234	100
Uranium-235	100
Uranium-238 + short-lived progeny	100

1

2 **4.2 Spent Ion-Exchange Resins**

3 At a minimum, spent IX resins will be tested for the applicable contaminants listed in Table 3-3 of the  
 4 200 West P&T SAP (DOE/RL-2009-124-ADD4). If offsite shipment is necessary (not normally performed),  
 5 it will be verified to be below radiological release criteria, as specified in DOE O 458.1 and 10 CFR 835,  
 6 "Occupational Radiation Protection."

7 Resins that contain radionuclides above DOE release criteria will be disposed at ERDF, provided the  
 8 waste acceptance criteria for the facility are met. If the acceptance criteria cannot be met, the material will  
 9 be evaluated for additional treatment at an onsite or offsite facility. If treatment is necessary for resins that  
 10 are designated as dangerous waste before disposal at ERDF, treatment will be in accordance with an  
 11 approved treatment plan. If treatment options are not available, the waste may be managed within the  
 12 Hanford Site Solid Waste Operations Complex.

### 4.3 Filter Elements

The 200 West P&T has bag filters and other filter elements. Fine particles present in the groundwater collect on the bag filters located in filter housings. The bag filters are removed from the filter housings and replaced as needed to maintain system efficiency. The bag filters are dewatered and transferred into appropriate containers for onsite shipment to ERDF. Water from the filter removal process will be reintroduced to the influent side of the 200 West P&T system.

### 4.4 Drill Cuttings

Drill cuttings generated within the 200-ZP-1 OU are considered IDW and are managed in accordance with DOE/RL-2011-41 and the requirements identified in this WMP. Given the amount of data from the many wells and the samples collected from the vadose and saturated zones in the 200 West Area, existing information (e.g. process knowledge, sample results) may be used to determine if drill cuttings will be contaminated and whether the drill cuttings need to be sampled prior to waste disposition. The process for documenting the sampling and analysis requirements of IDW characterization sampling is provided in SGW-65999, *Hanford Site Investigation Derived Waste Evaluation Process for Sampling and Analysis*, and will be performed as needed when new wells are drilled. Drill cuttings from the vadose zone and saturated zone will be segregated. Vadose zone drill cuttings suspected to be contaminated will be containerized. Vadose zone drill cuttings that are not suspected to be contaminated based on existing information may be stockpiled on plastic or placed in containers near the point of generation. All saturated zone drill cuttings will be containerized.

Vadose zone drill cuttings may be returned to the environment if they are not designated as dangerous waste (in accordance with WAC 173-303), are below the cleanup standards of WAC 173-340-740 ("Model Toxics Control Act Cleanup Regulations," "Unrestricted Land Use Soil Cleanup Standards"), and have been radiologically released.

Vadose zone drill cuttings that do not meet the return-to-environment criteria will be disposed at ERDF if the facility's waste acceptance criteria are met. If the ERDF waste acceptance criteria cannot be met, the material will be evaluated for additional treatment at an onsite or offsite facility. If treatment options are not available, the waste may be managed within the Hanford Site Solid Waste Operations Complex.

Saturated zone drill cuttings will be placed in containers near the point of generation. Contained drilling slurries (e.g., decanted water) will be safely removed from the containers (i.e., suctioned, ladled, or drained), and free liquids greater than 1% remaining in the container will be reduced by evaporation and/or stabilized by the addition of sorbent material prior to disposal. Removed drilling slurries will be managed as purgewater.

Drill cuttings may also be sampled in accordance with project-specific sampling and analysis plans.

### 4.5 Liquids

Various liquid wastes are generated from O&M of well-related activities (as described in Chapter 2) and the 200 West P&T. Contaminated groundwater or liquids undergoing treatment (in process) at the 200 West P&T that are off-specification may be returned to the influent side of the 200 West P&T facility or may be sent to MSUs, as needed. Small volumes of liquid that have been stabilized may also be disposed at ERDF if the facility's waste acceptance criteria can be met. Liquid waste that cannot be pretreated to meet ERDF waste acceptance criteria will be evaluated for additional treatment at an onsite or offsite facility. If treatment options are not available, the waste may be managed within the Hanford Site Solid Waste Operations Complex.

#### 4.5.1 Purgewater

Purgewater generated from investigation and remediation activities within the 200-ZP-1 OU will be managed in accordance with DOE/RL-2011-41 and DOE/RL-2009-80, *Investigation Derived Waste Purgewater Management Work Plan*, as modified by TPA-CN-0842, *Tri-Party Agreement Change Notice Form: DOE/RL-2009-80, Investigation-Derived Waste Purgewater Management Work Plan, Rev. 0*. For wells already connected to the 200 West P&T, purgewater may be taken to the 200 West P&T

1 for treatment. All incoming purgewater goes through a filter bank at the 200 West P&T prior to being sent  
2 to the influent tank to avoid sediment-laden water from entering the system. For wells not already  
3 connected to the 200 West P&T, purgewater associated with installation, development, testing,  
4 monitoring, sampling, and maintenance, as well as any water decanted from saturated drill cuttings, is  
5 generally collected in a purgewater truck at the time of generation and transported to the purgewater  
6 MSUs. The 200 West P&T may be used for purgewater disposition as approved in DOE/RL-2009-80 (and  
7 described in Section 4.13). Since May 2019, MSU purgewater has been directly piped to the 200 West  
8 P&T for treatment, as necessary. The Effluent Treatment Facility (ETF) will only be used to treat  
9 purgewater as deemed necessary. When purgewater is treated at ETF, it must meet the ETF waste  
10 acceptance criteria (HNF-3172, *Liquid Waste Processing Facilities Waste Acceptance Criteria*). In some  
11 instances, purgewater may be stored near the point of generation (e.g., during drilling activities,  
12 purgewater may be stored near the point of generation until drilling and well development activities  
13 are complete).

#### 14 **4.5.2 Water Drained from Granular-Activated Carbon and Resin Roll-Off Boxes**

15 During replacement or removal of GAC and IX resin at the 200 West P&T, water may be drained from the  
16 GAC and resin boxes. The water drained from the GAC and resin roll-off boxes will be reintroduced to the  
17 influent side of the 200 West P&T.

#### 18 **4.5.3 Algae Removal Liquids**

19 Water generated during algae removal activities may be contained and returned to the influent side of the  
20 200 West P&T, to MSUs, or to ETF.

#### 21 **4.5.4 Decontamination Fluids**

22 Decontamination fluids (i.e., water or nonhazardous cleaning solutions) generated from cleaning  
23 equipment, tools, and materials will be contained and returned to the influent side of the 200 West P&T  
24 or may be dispositioned to MSUs, ETF (if waste acceptance criteria can be met), or other approved  
25 facility. Small volumes (generally less than 208 L [55 gal]) of decontamination fluids may be stabilized  
26 to  $\leq 1\%$  free liquid and disposed at ERDF if the facility's waste acceptance criteria can be met.

27 Decontamination of some equipment (e.g., split-spoon samplers) may be conducted at the Soil and  
28 Groundwater Remediation Project sampling equipment cleaning facility because decontamination and  
29 containment systems are already established at this location. The decontamination waste liquids will be  
30 returned to the influent side of the 200 West P&T or dispositioned to MSUs, ETF (if waste acceptance  
31 criteria can be met), or other approved facility.

#### 32 **4.5.5 Sample Analysis and Screening Liquids**

33 Unaltered liquid waste (i.e., unused groundwater) generated during sample screening and analysis will be  
34 managed as purgewater. Altered samples will be contained and returned to the influent side of the  
35 200 West P&T for treatment. Altered samples also may be disposed at MSUs, ETF, ERDF, or other  
36 appropriate facility, depending on the waste designation. Some liquids may be neutralized and/or  
37 stabilized to meet the disposal facility's waste acceptance criteria.

#### 38 **4.5.6 Liquids from Unplanned Releases**

39 Liquids generated by unplanned releases from the 200 West P&T may be returned to the influent side of  
40 the 200 West P&T. If liquids cannot be returned to the treatment facility, they will be managed in  
41 accordance with the appropriate containment, storage, and disposal requirements and disposed at MSUs,  
42 ETF, or ERDF. Liquids may be evaporated or stabilized (generally less than 208 L [55 gal]) and stabilized  
43 material may be transported to ERDF if the facility's waste acceptance criteria can be met.

#### 44 **4.6 Incidental Solid Waste**

45 Equipment and tools having only incidental nonroutine contact with contaminated groundwater will be  
46 air dried to remove volatile organic compounds. After the materials have been dried, the equipment and

1 tools will no longer be considered contaminated with “F001” through “F005” listed waste in accordance  
2 with WAC 173-303-070(2)(c)(ii).

3 In addition, water washing, spraying, or high-pressure steam cleaning of equipment and tools with or  
4 without nonhazardous cleaning solutions meets the alternative treatment standards for hazardous debris  
5 identified in Table 1 of 40 CFR 268.45, “Land Disposal Restrictions,” “Treatment Standards for Hazardous  
6 Debris.” These equipment and tools will no longer be considered contaminated with “F001” through  
7 “F005” listed waste, provided the equipment and tools meet the definition of a clean debris surface.  
8 As described in 40 CFR 268.45, a clean debris surface is defined as “...the surface, when viewed without  
9 magnification, shall be free of all visible contaminated soil and hazardous waste, except that residual  
10 staining from soil and waste consisting of light shadows, light streaks, or minor discolorations; and soil  
11 and waste in cracks, crevices, and pits may be present, provided that such staining and waste and soil in  
12 cracks, crevices, and pits shall be limited to no more than 5 percent of each square inch of surface area.”

#### 13 **4.7 Miscellaneous Solid Waste**

14 MSW may be generated from construction and O&M activities at the 200 West P&T or from well-related  
15 activities at the 200-ZP-1 OU. Contaminated and noncontaminated MSW will be segregated and placed  
16 in containers that are appropriate for the material, the contaminant, and the disposal facility. MSW  
17 contacted with contaminated media may be disposed at ERDF if the facility’s waste acceptance criteria  
18 are met. If the waste acceptance criteria cannot be met, the waste will be evaluated for additional  
19 treatment at an onsite or offsite facility prior to disposal. If treatment options are not available, the waste  
20 may be managed within the Hanford Site Solid Waste Operations Complex. MSW that has not contacted  
21 chemically or radiologically contaminated media and is not a WAC 173-303 dangerous waste may be  
22 disposed at an offsite solid waste landfill or recycled.

#### 23 **4.8 Decommissioning Debris**

24 Decommissioning debris (e.g., concrete, wood, rebar, metal or plastic pipe and screens, wire, bentonite,  
25 sand, gravel, equipment, and pumps) is generated during decommissioning of wells or other equipment.  
26 Debris contacted with contaminated media may be disposed at ERDF if the facility’s waste acceptance  
27 criteria are met. If ERDF waste acceptance criteria cannot be met, the waste will be evaluated for  
28 additional treatment at an onsite or offsite facility prior to disposal. If treatment options are not available,  
29 the waste may be managed within the Hanford Site Solid Waste Operations Complex. Debris that has not  
30 contacted potentially contaminated media, is not a WAC 173-303 dangerous waste, and has been  
31 radiologically released may be disposed offsite at a solid waste landfill or at an onsite demolition landfill,  
32 or the debris may be recycled, as appropriate.

#### 33 **4.9 Spent or Expired Chemicals/Reagents and Used Oil**

34 Spent or expired chemicals/reagents that are generated during field sampling and analysis or from  
35 200 West P&T operations will be managed, designated, and disposed as appropriate for the specific  
36 chemical or reagent. Used oil generated during operation of the treatment system will be managed by the  
37 Hanford Site used oil program administered by the Consolidated Central Recycle Center, or will properly  
38 be dispositioned as waste, as appropriate.

39 Offsite facilities that receive CERCLA-contaminated waste must be approved by EPA in accordance with  
40 40 CFR 300.440. Exceptions include used oil, spent or expired chemicals and reagents, and solid waste  
41 that has not contacted contaminated media and is recycled or disposed at an offsite solid waste landfill.

#### 42 **4.10 Sampling-Related Waste**

43 Screening and analysis of solid and liquid samples may be conducted in the field during 200 West P&T  
44 operations. Once testing is complete, liquid sample material may be returned to the influent side of the  
45 200 West P&T or properly dispositioned to MSUs, ETF, or ERDF.

#### 4.11 Treatability Test Waste

Wastes generated by treatability testing in support of remedial actions and the P&T process will be managed, designated, and disposed at ETF, ERDF, or other appropriate facility, depending on the waste designation. If waste acceptance criteria cannot be met, the waste will be evaluated for additional treatment at an onsite or offsite facility prior to disposal. If treatment options are not available, the waste may be managed within the Hanford Site Solid Waste Operations Complex.

#### 4.12 Environmental Restoration Disposal Facility Leachate

Leachate derived from landfill operations at ERDF may be managed at the 200 West P&T.

#### 4.13 Modular Storage Unit Purgewater

MSU purgewater may be managed at the 200 West P&T. MSU purgewater has been monitored and evaluated as a feed stream for treatment at the 200 West P&T during a pilot test designed to reduce well foulants introduced into the MSU purgewater from well cleaning, well rehabilitation, well maintenance, and well development (DOE/RL-2018-28, *Optimization Test Plan for Treating Water from Modular Storage Units at 200 West Pump & Treat Facility*). MSU purgewater is an accepted feed stream at the 200 West P&T that is transferred intermittently (DOE/RL-2009-124-ADD5, *Feed Stream Acceptance Criteria for the 200 West Pump and Treat*).

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Attachment 3  
25-SGD-0057

Feed Stream Acceptance Criteria for the 200 West Pump  
and Treat Operations and Maintenance Plan  
DOE/RL-2009-124-ADD5, Draft A

(23 pages including cover sheet)

# Feed Stream Acceptance Criteria for the 200 West Pump and Treat Operations and Maintenance Plan

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

Contractor for the U.S. Department of Energy  
under Contract 89303320DEM000030

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Release Approval

Date

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## Contents

<b>1</b>	<b>Introduction</b> .....	<b>1</b>
<b>2</b>	<b>Feed Stream Acceptance Decision Process</b> .....	<b>2</b>
	2.1 Treatment Feasibility Evaluation.....	2
	2.2 Feed Stream Acceptance and Approval .....	10
<b>3</b>	<b>Existing Evaluations</b> .....	<b>10</b>
<b>4</b>	<b>References</b> .....	<b>11</b>

## Tables

Table 1.	Accepted Feed Streams at the 200 West P&T Facility .....	1
Table 2.	Contaminants and OUs Impacting the 200 West P&T .....	4
Table 3.	Partitioning Factors Used to Determine the Acceptance Criteria.....	6
Table 4.	Other Constituents Impacting Treatment .....	9

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## Acronyms

COC	contaminant of concern
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
IX	ion exchange
MSU	modular storage unit
OU	operable unit
P&T	pump and treat
ROD	record of decision

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## 1 Introduction

This document presents the criteria that will be considered for each new aqueous feed stream and outlines the approval process to accept new feed streams at the 200 West Pump and Treat (P&T) facility. The 200 West P&T has been approved to treat groundwater from the 200-ZP-1, 200-UP-1, 200-BP-5, and 200-PO-1 Operable Units (OUs); perched water from the 200-DV-1 OU; leachate from the Environmental Restoration Disposal Facility (ERDF); and purgewater from the modular storage units (MSUs), which includes purgewater from across the Hanford Site. The 200 West P&T includes radiological treatment equipment (e.g., uranium and technetium-99 ion-exchange [IX] systems), biological treatment equipment (e.g., fluidized bed reactors), and other major treatment equipment (e.g., air stripper/granular-activated carbon tower) that can remove a number of different contaminants, as described in DOE/RL-2009-124, *200 West Pump and Treat Operations and Maintenance Plan*. The 200 West P&T is currently classified as a less than hazard class 3 facility, and as new feed streams are considered, they must be assessed both for the ability of the 200 West P&T to provide adequate treatment and for the impact on hazard classification. Hazard classification is documented in a separate document (SGW-40032, *Soil and Groundwater Remediation Project Facility Hazard Categorization*). Feed stream acceptance criteria for various contaminants are identified in terms of maximum influent concentrations that can be treated to meet applicable cleanup levels and drinking water standards. New feed streams must be evaluated with respect to managing all other feed streams to satisfy acceptance criteria.

Feed streams that have been approved for the 200 West P&T are summarized in Table 1. In October 2019, biological treatment processes were suspended for removal of nitrate as described in DOE/RL-2019-38, *200-ZP-1 Operable Unit Optimization Study Plan*. These feed streams were reevaluated using the methods outlined in this document to determine whether the revised treatment system with active biological processing suspended provides adequate treatment. The evaluation found that the revised treatment system was acceptable, and is documented in SGW-64439, *Engineering Calculation: 2019 Integrated Mass Balance for the 200 West Pump and Treat Facility*. As new feed streams are approved by the U.S. Environmental Protection Agency (EPA) they will be added to Table 1. This feed stream acceptance criteria document will be reviewed annually and updated as appropriate.

**Table 1. Accepted Feed Streams at the 200 West P&T Facility**

Source	Year Added	Guiding Engineering Evaluation	Pretreatment Requirements <sup>a</sup>	Approximate Average Annual Flow; L/min (gal/min)	Intermittent or Continuous
200-ZP-1 OU (nonradioactive wells)	2012	--	None	10,900 (2,870)	Continuous.
200-ZP-1 OU (radioactive wells)	2012	--	Technetium-99	1,200 (316)	
200-UP-1 OU (S-SX Farms and U Plant)	2015	SGW-59108 <sup>b</sup>	Uranium and technetium-99	1,070 (281)	
200-BP-5 OU (B Complex)	2015	SGW-59550 <sup>c</sup>	Uranium and technetium-99	607 (161)	
200-BP-5 and 200-PO-1 OU (C Farm and A-AX Farms)	Target date of 2025	SGW-65045	Technetium-99	946 (250)	
200-DV-1 OU perched water	2016	SGW-59550	Uranium and technetium-99	10.6 (2.80)	

**Table 1. Accepted Feed Streams at the 200 West P&T Facility**

Source	Year Added	Guiding Engineering Evaluation	Pretreatment Requirements <sup>a</sup>	Approximate Average Annual Flow; L/min (gal/min)	Intermittent or Continuous
ERDF leachate	2016	SGW-58619	Uranium and technetium-99	Not applicable	Intermittent. During transfer flow is 38 to 57 L/min (10 to 15 gal/min).
MSU purgewater	2018	SGW-61287	-- <sup>d</sup>	Not applicable	Intermittent. During transfer flow is 35 to 190 L/min (9 to 50 gal/min).
Reacceptance of feed streams following suspension of biological treatment	2019	SGW-64439 <sup>d</sup>	--	Unchanged from above	Unchanged from initial acceptance in SGW-59872.

Note: Complete reference citations are provided in Chapter 4.

a. Pretreatment refers to treatment by the uranium ion-exchange system, the technetium-99 ion-exchange system, or both ion-exchange systems before treatment within the central treatment facility as described in DOE/RL-2009-124, *200 West Pump and Treat Operations and Maintenance Plan*.

b. Feed stream introduced to the 200 West P&T based on an integrated mass balance calculation.

c. Feed stream was reevaluated and is documented in SGW-65045, *Feed Stream Acceptance Evaluation: Groundwater from A-Farm and C-Farm*.

d. After isolation, the MSU purgewater may be treated with copper sulfate or sodium hypochlorite or both to remove algae and bacteria. Sodium hypochlorite will also oxidize iron and manganese to insoluble forms that can be settled or filtered. The purgewater may also be filtered.

ERDF: Environmental Restoration Disposal Facility

OU: operable unit

P&T: pump and treat

MSU: modular storage unit

## 2 Feed Stream Acceptance Decision Process

The ability of the 200 West P&T to treat a new aqueous feed stream will be evaluated to determine if the new feed stream could be effectively treated to meet applicable cleanup levels or drinking water standards. The approval to treat new feed streams at the 200 West P&T consists of a treatment feasibility evaluation (Section 2.1) before long-term acceptance and approval by EPA (Section 2.2). The treatment feasibility evaluation will provide preliminary recommendations of where the feed stream should be introduced to the facility, the recommended combination ratio, and any recommendations for additional sampling.

### 2.1 Treatment Feasibility Evaluation

All aqueous feed streams under consideration for treatment at the 200 West P&T will be characterized using existing analytical data, historical and process knowledge, and hydraulic analysis. The treatment feasibility evaluation of a new feed stream will be documented in a separate evaluation (e.g., SGW-65045, *Feed Stream Acceptance Evaluation: Groundwater from A-Farm and C-Farm*). A new feed stream will be considered feasible to treat if it will not cause a plant effluent exceedance beyond the applicable regulatory requirements for water quality standards, including drinking water standards and cleanup levels. In addition, the contaminants of concern (COCs) from several OUs that contribute water to

1 the MSUs as purgewater are considered. Thus, the treatment feasibility evaluation can include the COCs  
2 from the OUs listed below and in Table 2:

- 3 • 100-BC-5 (EPA et al., 2021b, *Record of Decision Hanford 100 Area Superfund Site 100-BC-1,*  
4 *100-BC-2, and 100-BC-5 Operable Units*): hexavalent chromium, strontium-90, trichloroethene, and  
5 tritium.
- 6 • 100-FR-3 (EPA and DOE, 2014, *Record of Decision Hanford 100 Area Superfund Site 100-FR-1,*  
7 *100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units*): strontium-90, hexavalent chromium,  
8 trichloroethene, and nitrate.
- 9 • 100-HR-3 (EPA et al., 2018, *Record of Decision Hanford 100 Area Superfund Site 100-DR-1,*  
10 *100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units*): hexavalent chromium, nitrate,  
11 strontium-90, and total chromium.
- 12 • 100-KR-4 (EPA/ROD/R10-96/134, *Record of Decision for the USDOE Hanford 100-HR-3 and*  
13 *100-KR-4 Operable Units, Hanford Site, Benton County, Washington*) (co-contaminants<sup>1</sup> shown as  
14 gray): hexavalent chromium, tritium, and strontium-90.
- 15 • 100-NR-2 (DOE/RL-2012-15, *Remedial Investigation/Feasibility Study for the 100-NR-1 and*  
16 *100-NR-2 Operable Units*) (co-contaminants shown as gray): hexavalent chromium, strontium-90,  
17 tritium, nitrate, and total petroleum hydrocarbons (diesel- and motor oil-range)
- 18 • 200-BP-5 and 200-PO-1 OUs (EPA et al., 2021a, *Interim Record of Decision for Hanford 200 Area*  
19 *Superfund Site 200-BP-5 and 200-PO-1 Operable Units*) (co-contaminants shown as gray):  
20 technetium-99, uranium, nitrate, iodine-129, cyanide, strontium-90, and tritium.
- 21 • 200-DV-1 Perched Water (DOE/RL-2014-34, *Action Memorandum for 200-DV-1 Operable Unit*  
22 *Perched Water Pumping/Pore Water Extraction*): uranium, technetium-99, nitrate, total chromium,  
23 hexavalent chromium, and tritium.
- 24 • 200-UP-1 (EPA et al., 2012, *Record of Decision for Interim Remedial Action, Hanford 200 Area*  
25 *Superfund Site, 200-UP-1 Operable Unit*; hereinafter referred to as the 200-UP-1 OU interim Record  
26 of Decision [ROD]): iodine-129, technetium-99, tritium, uranium, nitrate, total chromium, hexavalent  
27 chromium, and carbon tetrachloride.
- 28 • 200-ZP-1 (EPA et al., 2008, *Record of Decision, Hanford 200 Area, 200-ZP-1 Superfund Site, Benton*  
29 *County, Washington*; hereinafter referred to as the 200-ZP-1 OU ROD): iodine-129, technetium-99,  
30 tritium, nitrate, trichloroethene, total chromium, hexavalent chromium, and carbon tetrachloride.
- 31 • 300-FF-5 (EPA and DOE, 2013, *Hanford Site 300 Area Record of Decision for 300-FF-2 and*  
32 *300-FF-5, and Record of Decision Amendment for 300-FF-1*): uranium, tritium, nitrate,  
33 trichloroethene, cis-1,2-dichloroethene, and gross alpha.

34 ERDF leachate is a currently approved feed stream. The ERDF leachate is required to meet the cleanup  
35 criteria identified in the 200-ZP-1 OU ROD (EPA et al., 2008) but introduces no new cleanup criteria.  
36 The ERDF leachate feed stream is transferred to the 200 West P&T intermittently. New feed stream  
37 evaluations will consider the impact of processing the new feed stream concurrently with the contaminant  
38 concentrations and flow rates of the ERDF leachate feed stream as if it was continuous.

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<sup>1</sup> A co-contaminant is a constituent that is recognized as a contaminant, not obligated to be treated in the Administrative Record. For the evaluation of feed stream acceptance, the co-contaminants were considered as a COC that needs to be treated to the cleanup level.

**Table 2. Contaminants and OUs Impacting the 200 West P&T**

Contaminant <sup>a</sup>	Governing Operable Units
Carbon tetrachloride	200-ZP-1, 200-UP-1
Chromium (total)	200-ZP-1, 200-UP-1, 100-BC-5 100-HR-3, 200-DV-1 perched water
Hexavalent chromium	200-ZP-1, 200-UP-1, 100-FR-3, 100-HR-3, 100-KR-4, 200-DV-1 perched water, 100-BC-5, 100-NR-2
Nitrate	200-ZP-1, 200-UP-1, 200-BP-5, 200-PO-1, 100-FR-3, 100-HR-3, 100-NR-2, 200-DV-1 perched water, 300-FF-5
Trichloroethene	200-ZP-1, 100-FR-3, 300-FF-5, 100-BC-5
Iodine-129	200-ZP-1, 200-UP-1, 200-BP-5, 200-PO-1
Technetium-99	200-ZP-1, 200-UP-1, 200-BP-5, 200-PO-1, 200-DV-1 perched water
Tritium	200-ZP-1, 200-UP-1, 200-BP-5, 200-PO-1, 100-BC-5, 100-KR-4, 100-NR-2, 200-DV-1 perched water, 300-FF-5
Uranium	200-UP-1, 200-BP-5, 200-DV-1 perched water, 300-FF-5
Total cyanide <sup>b</sup>	200-BP-5
Strontium-90	100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, 100-NR-2
Gross alpha <sup>c</sup>	300-FF-5
cis-1,2-dichloroethene	300-FF-5
TPH-diesel	100-NR-2
TPH-motor oil	100-NR-2

Note: Additional details about the COCs can be found in the OU-specific decision documents listed in Section 2.1 of this document.

a. Groundwater contaminant of concern, contaminant of potential concern, or co-contaminant applicable to each OU.

b. Total cyanide is identified in EPA et al., 2021, *Interim Record of Decision for Hanford 200 Area Superfund Site 200-BP-5 and 200-PO-1 Operable Units*, as a co-contaminant for the 200-BP-5 OU; however, cyanide is regulated as free cyanide. Because of this, free cyanide is a performance monitoring constituent for the 200-BP-5 and 200-PO-1 OUs and is included in Table 3.

c. The key contributors to gross alpha in the groundwater are radon and uranium.

COC: contaminant of concern

OU: operable unit

TPH: total petroleum hydrocarbons

1 The 200 West P&T has the ability to remove contaminants and the removal capability for each  
2 contaminant must be considered. The treatment feasibility evaluation establishes feed stream acceptance  
3 criteria for contaminants in a new feed stream. The feed stream acceptance criteria are determined  
4 based on:

- 5 1. The dividing factors of the individual treatment processes (partition coefficients); and either
- 6 2. Cleanup levels for the COCs specified in the 200-ZP-1 OU ROD or 200-UP-1 OU interim ROD;<sup>2</sup> or
- 7 3. Drinking water standards for contaminants that are not COCs specified in the 200-ZP-1 OU ROD or  
8 200-UP-1 OU interim ROD; or
- 9 4. Cleanup levels calculated using Model Toxics Control Act Method B (WAC 173-340-720, "Model  
10 Toxics Control Act Cleanup Regulations," "Groundwater Cleanup Standards"), if 2 and 3 (above) do  
11 not apply.

12 In the event of differing cleanup levels or drinking water standards, the more stringent concentration is  
13 used. Cleanup levels for COCs can vary among the OUs listed in Table 2; for example, the hexavalent  
14 chromium cleanup level for 200-ZP-1 OU groundwater is 48 µg/L (EPA et al., 2008), and the hexavalent  
15 chromium cleanup level for 100-BC-5 OU groundwater, which can be introduced to the 200 West P&T as  
16 MSU purgewater, is 10 µg/L (EPA et al., 2021b). In these instances, the cleanup level from the  
17 200-ZP-1 OU or the 200-UP-1 OU would be used to determine the feed stream acceptance criteria  
18 (per item 2, above) because the treated feed streams are subject to the regulatory discharge limits for  
19 the treated effluent (except for nitrate, as described in DOE/RL-2019-38) to injection wells in the 200-ZP-1  
20 and 200-UP-1 OUs. A new feed stream is considered "accepted" if the expected influent concentration  
21 (i.e., untreated contaminant concentration) is less than the feed stream acceptance criteria for each  
22 contaminant evaluated in the feed stream.

23 Partition coefficients are used to quantify the removal capability of the individual treatment processes for  
24 each contaminant listed in Table 3. The partition coefficient is the fraction of contaminant mass that is  
25 removed from the water stream. The partition coefficients are based on the values in SGW-45097,  
26 *Integrated Mass Balance for the 200 West Pump and Treat Facility*, and SGW-59108, *Integrated Mass  
27 Balance for Introduction of UP-1 Waste Stream to the 200 West Pump and Treat Facility*. In some cases,  
28 such as for cyanide, the partition coefficients were updated based on plant experience. There was no  
29 partition coefficient for arsenic, so a literature review was performed and determined arsenic is removed  
30 by ferric chloride, the coagulant added to the aerated membrane tanks.<sup>3</sup> Table 3 notes whether the  
31 contaminant is biologically assimilated, transferred to the vapor phase, or to the solid phase. The plant  
32 profile data should be reviewed periodically to confirm or update the partition coefficients. This information  
33 should be used to verify or update the feed stream acceptance criteria as part of the annual review of this  
34 document.

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<sup>2</sup> Because the water is injected back in the 200-UP-1 OU or the 200-ZP-1 OU, the injected water will comply with the treated effluent criteria applicable and relevant and appropriate requirements in the 200-UP-1 interim ROD (EPA et al., 2008) or the 200-ZP-1 ROD (EPA et al., 2012), as applicable prior to reinjection.

<sup>3</sup> The aerated membrane tanks are currently not operated due to suspension of the biological treatment system as outlined in DOE/RL-2019-38.

**Table 3. Partitioning Factors Used to Determine the Acceptance Criteria**

Contaminant	Units	Cleanup Level or Drinking Water Standard	Uranium IX <sup>a</sup>	Tc-99 IX <sup>b</sup>	Bioconversion FBR/AMT <sup>c</sup>	AMT/RDT/ Centrifuge Capture in Biosolids <sup>d</sup>	AMT Partition to Vapor Phase <sup>e</sup>	Air Stripper (Partition to Vapor Phase) <sup>f</sup>
<b>Radionuclides</b>								
Technetium-99	pCi/L	500 <sup>g</sup>	0.12	0.987	0	0.428	0	0
Iodine-129	pCi/L	1	0.027	0.027	0.12	0	0	0
Tritium	pCi/L	20,000	0	0	0	0	0	0
Strontium-90	pCi/L	8	0.1	0.1	0	0.0007	0	0
Gross alpha – U	pCi/L	15	0.99	0.012	0.10	0.013	0	0
Gross alpha – radon	pCi/L	15	0	0	0	0	0.40	0.60
Cobalt-60	pCi/L	100	0.39	0.39	0	0.93	0	0
<b>Metals</b>								
Hexavalent chromium	µg/L	48	0.000027	0.34	0.55	0	0	0.083
Total chromium	µg/L	100	0.00088	0.00088	0	0.81928	N/A	0
Arsenic <sup>h</sup>	µg/L	10	0	0	0	0.14	0	0
Manganese	µg/L	50	0	0	0	0.211	0	0
Vanadium	µg/L	112	0.01	0.07	0	0.73	0	0
Beryllium	µg/L	4	0	0	0	0.65	0	0
Lead	µg/L	50	0	0	0	0.47	0	0
Uranium	µg/L	30	0.99	0.012	0	0.109	0	0
Iron	µg/L	300	0	0	0	0.737	0	0
<b>Volatile Organic Compounds</b>								
Carbon tetrachloride	µg/L	3.4	0	0	0.36	0	0.92	0.993
Trichloroethene	µg/L	1	0	0.05	0.362	0	0.84	0.55
1,1,1-Trichloroethane	µg/L	200	0	0	0	0	0.748	0.9995
1,2-Dichloroethane	µg/L	5	0	0	0	0	0.042	0.55

**Table 3. Partitioning Factors Used to Determine the Acceptance Criteria**

Contaminant	Units	Cleanup Level or Drinking Water Standard	Uranium IX <sup>a</sup>	Tc-99 IX <sup>b</sup>	Bioconversion FBR/AMT <sup>c</sup>	AMT/RDT/ Centrifuge Capture in Biosolids <sup>d</sup>	AMT Partition to Vapor Phase <sup>e</sup>	Air Stripper (Partition to Vapor Phase) <sup>f</sup>
Acetone	µg/L	7,200	0	0	0.90	0	0.000	0.0013
Chloroform	µg/L	70	0	0	0	0	0.381	0.98
Dibromochloromethane (chlorodibromomethane)	µg/L	60	0	0	0	0	0.020	0.45
Methylene chloride (dichloromethane)	µg/L	5	0	0	0	0	0.372	0.9795
Dichloroethenes (all)	µg/L	70	0	0	0	0	0.691	0.9995
Vinyl chloride	µg/L	2	0	0	0	0	0.835	0.9995
<b>Semivolatile Organic Compounds</b>								
Benzene	µg/L	5	0	0	0	0	0.528	0.996
<b>Inorganics (Anions and Cyanide)</b>								
Nitrate (as N)	mg/L	10	0	0.01	0.82	0	0	0
Sulfate	mg/L	250	0	0	0	0	0	0
Ferrocyanide <sup>i</sup>	µg/L	200	0.95	0.2	0	0	0	0
Free cyanide <sup>i</sup>	µg/L	4.8	0	0	0	0	0	0

**Table 3. Partitioning Factors Used to Determine the Acceptance Criteria**

Contaminant	Units	Cleanup Level or Drinking Water Standard	Uranium IX <sup>a</sup>	Tc-99 IX <sup>b</sup>	Bioconversion FBR/AMT <sup>c</sup>	AMT/RDT/Centrifuge Capture in Biosolids <sup>d</sup>	AMT Partition to Vapor Phase <sup>e</sup>	Air Stripper (Partition to Vapor Phase) <sup>f</sup>
<b>General Chemistry</b>								
Total dissolved solids	mg/L	500	0	0	0	0	0	0
pH <sup>l</sup>	--	6.5 to 8.5	0	0	0	0	0	0

Note: Partition coefficients are calculated as follows: Mass Fraction Removed = (Influent mass-Effluent mass)/Influent mass. Partition coefficients are from SGW-45097, *Integrated Mass Balance for the 200 West Pump and Treat Facility*, and SGW-59108, *Integrated Mass Balance for Introduction of UP-1 Waste Stream to the 200 West Pump and Treat Facility*, unless otherwise noted.

a. The fraction of influent mass adsorbed to the uranium IX resin.

b. The fraction of influent mass adsorbed to the technetium-99 IX resin.

c. The fraction of influent mass that is bio-converted to another compound (e.g., carbon tetrachloride is converted to carbon dioxide and water).

d. The fraction of influent mass attached to solids and removed by solids processing. Includes partition to solids in AMT, RDT, and centrifuge. Treated solids, with attached contaminants, are sent to ERDF.

e. The fraction of influent mass volatilized to offgas and adsorbed to granular activated carbon.

f. The fraction of influent mass volatilized to offgas and adsorbed to granular activated carbon.

g. The cleanup level for technetium-99 is 900 pCi/L. An activity of 500 pCi/L has been adopted at the 200 West Pump and Treat to limit potential nuclear radiation exposure that may result from the accumulation of technetium-99 on metal surfaces in the central treatment facility.

h. Data from literature for arsenic removal with ferric coagulants.

i. Data from plant experience with cyanide.

j. pH is not "removed" per se but can be adjusted to some extent.

AMT: aerated membrane tank

ERDF: Environmental Restoration Disposal Facility

FBR: fluidized bed reactor

IX: ion exchange

N/A: not applicable

RDT: rotary drum thickener

1 The feed stream acceptance criteria for each contaminant evaluated in the feed stream are based on the  
2 following formula:

3

$$4 \quad \text{Feed Stream Acceptance Criteria} = \frac{\text{Cleanup Level or Drinking Water Standard}}{\prod_{i=1}^n (1 - \text{Process Partition Factor } i)} =$$

$$5 \quad \frac{\text{Cleanup Level or Drinking Water Standard}}{(1 - \text{Process Partion Factor } 1) \cdot (1 - \text{Process Partition Factor } 2) \cdot \dots \cdot (1 - \text{Process Partion Factor } n)}$$

6

7  
8 For example, using the partition coefficients and cleanup level for total chromium treated through the  
9 uranium IX system, technetium-99 IX system, biological treatment processes, and air stripper, the feed  
10 stream criteria for total chromium is 554 µg/L, and is calculated as follows:

$$11 \quad \text{Feed Stream Acceptance Criteria} = \frac{100 \mu\text{g/L}}{(1 - 0.00088) \cdot (1 - 0.00088) \cdot (1 - 0) \cdot (1 - 0.81928) \cdot (1 - 0)} = 554 \mu\text{g/L}$$

12

13 In many cases, the calculated values were rounded down to two significant figures to provide a modest  
14 level of conservatism. The feed stream is considered acceptable when the expected influent  
15 concentration is less than the feed stream acceptance criteria for each contaminant evaluated in the feed  
16 stream. The feed stream acceptance criteria for new feed streams are documented in separate  
17 evaluations.

18 In addition to the feed stream acceptance criteria calculation, other factors are considered in the  
19 treatment feasibility evaluation, including the impact on hazard classification, other regulatory  
20 commitments that may be affected, the impact on all other feed streams, and the quantity of water to be  
21 treated. Small quantities of highly contaminated water can be processed as long as the combined ratio is  
22 managed. New feed streams with concentrations greater than the feed stream acceptance criteria, or with  
23 new constituents, will have to be reviewed on a case-by-case basis to meet the requirements identified in  
24 the governing decision documents.

25 In some cases, additional sampling may be recommended, and the results may change the  
26 recommendation presented in the treatment feasibility evaluation document. Other constituents that may  
27 impact treatment are presented in Table 4.

**Table 4. Other Constituents Impacting Treatment**

Parameter (Units)	Criteria	Source	Comments
Hardness (mg/L as CaCO <sub>3</sub> )	300	Engineering estimate	Hardness fouls instruments, scales pipe, fittings, and ion-exchange media.
Total suspended solids (mg/L)	500	DOE/RL-2010-13	Filters, pipe, fittings, and ion-exchange media are fouled.
Dissolved oxygen (mg/L)	11.3		Nitrate removal is compromised as the dissolved oxygen increases.
Alkalinity (mg/L as Ca CO <sub>3</sub> )	200	Engineering estimate	Effectiveness of acids used for pH adjustment is limited.

Reference: DOE/RL-2010-13, *200 West Area Groundwater Pump-and-Treat Remedial Design Report*.

Note: The parameters impacting treatment do not have cleanup levels, but exceeding the acceptance criteria can impact the operation of the 200 West pump and treat system. The impact should be evaluated before accepting the new feed stream.

1 If it is determined that a new feed stream can be feasibly treated, the treatment feasibility evaluation,  
2 including recommendations, will be shared with EPA as soon as practical at the discretion of the  
3 U.S. Department of Energy (DOE). Upon agreement to pursue treatment of the new feed stream, a  
4 sampling strategy consisting of process and laboratory sampling will be developed.

5 Some feed streams that have been accepted for treatment are delivered on an episodic basis. A feed  
6 stream that has a history of consistent quality and is considered to be easily treated may not require  
7 sampling before processing. A feed stream that is variable in quality and more difficult to treat may  
8 require sampling before processing. The frequency of data collection for a new feed stream will be  
9 documented in DOE/RL-2009-124-ADD4, *200 West Pump and Treat Sampling and Analysis Plan*.  
10 The sampling frequency for leachate from ERDF is the one exception. The sampling and analysis of  
11 ERDF leachate will be performed as specified for routine testing in ERDF procedures and ERDF-00093,  
12 *Environmental Restoration Disposal Facility Leachate Sampling and Analysis Plan*.

13 If the treatment feasibility evaluation indicates the feed stream cannot be feasibly treated, EPA will be  
14 briefed as soon as practical at the discretion of DOE. Recommendations for rejection of the feed stream  
15 or potential system modifications to accommodate the new feed stream will be provided for consideration.

## 16 **2.2 Feed Stream Acceptance and Approval**

17 The recommendation to accept a new feed stream for treatment at the 200 West P&T will be made by DOE  
18 to EPA. EPA will make the final decision for feed stream acceptance. Each feed stream is evaluated on  
19 a case-by-case basis to determine how treatment of the new feed stream will impact existing regulatory  
20 commitments. The *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*  
21 process documents applicable to the 200 West P&T will be updated as necessary (using Tri-Party  
22 Agreement change notices [Ecology et al., 1989, *Hanford Federal Facility Agreement and Consent Order*]  
23 prior to the next revision) based on process knowledge and system performance and changes due to  
24 other newly accepted feed streams (e.g., DOE/RL-2009-124; DOE/RL-2008-78, *200 West Area*  
25 *200-ZP-1 Pump-and-Treat Remedial Design/Remedial Action Work Plan*). The new feed stream will be  
26 added to Table 1 and Chapter 3.

## 27 **3 Existing Evaluations**

28 Implementing documents for the feed stream(s) are listed in this chapter. These implementing documents  
29 are used to ensure there are no impacts to the following, as applicable: decision documents listed in  
30 Chapter 1 of DOE/RL-2009-124; remedial design/remedial action work plan commitments (e.g.,  
31 DOE/RL-2008-78; DOE/RL-2013-07, *200-UP-1 Groundwater Operable Unit Remedial Design/Remedial*  
32 *Action Work Plan*); or other OU commitments. The following is a brief overview of the information and  
33 evaluations contained in each of the existing documents for feed streams to be treated at the  
34 200 West P&T:

- 35 • SGW-47536, *Functional Design Criteria for 200-UP-1 Groundwater Operable Unit Remedial Design*,  
36 presents functional design criteria for the 200-UP-1 OU providing the design criteria for the 200 West  
37 P&T and flow path control portion of the selected remedy for the U Plant plume.
- 38 • SGW-57790 provides a technical basis for evaluations of hazard classification and treatment  
39 assessments for potential feed streams from 200-ZP-1, 200-UP-1, 200-BP-5, ERDF leachate,  
40 200-DV-1 perched water, MSUs, and A-AX Farms and C Farm (located in the 200-PO-1 OU and  
41 200-BP-5 OU, respectively) for treatment at the 200 West P&T.
- 42 • SGW-58619, *Impact of Environmental Restoration Disposal Facility (ERDF) Leachate on the*  
43 *200 West Area Pump and Treat Facility*, provides an evaluation of contaminant concentrations in  
44 ERDF leachate and compares the expected concentration to the 200 West P&T design criteria.
- 45 • SGW-59550, *Initial Operation of Uranium Ion Exchange at 200 West Pump and Treat*, provides  
46 direction in the use of IX resin for removing uranium in contaminated water from 200-UP-1, 200-BP-5,  
47 and 200-DV-1 perched water.

- 1 • SGW-59852, *Engineering Evaluation: Receiving Water in Offload Station*, provides the approach to  
2 characterize water to be delivered to the offload station and to maintain steady influent concentrations  
3 of key water quality constituents during treatment.
- 4 • SGW-59871, *ERDF Leachate Sampling Strategy*, provides the sampling strategy and actions to  
5 ensure that leachate from ERDF does not hinder treatment at the 200 West P&T.
- 6 • SGW-61287, *Impact of Modutank Water on the 200 West Pump and Treat*, provides an evaluation of  
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