APPENDIX G.5.3

U PLANT (CP-LS-3, CENTRAL PLATEAU)
EVALUATION UNIT SUMMARY TEMPLATE

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PART I. EXECUTIVE SUMMARY

EU LOCATION

Liquid waste discharges in the south/eastern part of 200 West Area associated with U Plant (CP-DD-3) operations.

RELATED EUS

CP-LS-7, CP-DD-3, and CP-GW-2

PRIMARY CONTAMINANTS, CONTAMINATED MEDIA AND WASTES

The U Plant Area was previously divided into five distinct components (DOE/RL-2003-24, Rev. 0):

- 221-U Facility and related facilities (271-U Support Services Building, the 276-U Solvent Handling Facility, and other surrounding structures and waste sites). The 221-U Facility and related facilities are addressed in the CP-DD-3 (U Plant) EU (Appendix F.8).
- Facilities that are ancillary or related to the 221-U Facility. These related facilities are addressed in the CP-DD-3 (U Plant) EU (Appendix F.8).
- Underground pipelines. There are several pipeline-related WIDS codes designated for the U Plant Cribs and Ditches (CP-LS-3) EU; however, none have inventories in the Soil Inventory Model (SIM), Rev. 1 database (Corbin, et al. 2005). One pipeline (200-W-141-PL[1]) is part of the Single Shell Tank (SST) System (DOE/RL-2010-114, Draft A, p. A-22) and thus assumed treated in the Tank Waste and Farms EU (Appendix E) where pipelines and associated equipment were evaluated in the Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS) (DOE/EIS-0391). Other CP-LS-3 EU pipelines and associated equipment may have been addressed in the TC&WM EIS and thus Tank Waste and Farms EU (Appendix E); however, the remaining pipeline and related wastes sites will not be evaluated further due to a lack of inventory information.
- Soil waste sites (such as those described in the 200-UW-1 or 200-WA-1 Operable Unit [OU][2]). Selected soil waste sites are described in Attachment A. The inventories for the appropriate soil waste sites are taken from SIM, Rev. 1 (Corbin, et al. 2005)[3].

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[1] The 200-W-141-PL pipeline that connects to the 216-S-23 Crib is part of both the CP-LS-3 and CP-LS-4 EUs. However, since the 216-S-23 Crib is part of the CP-LS-3 EU, the 200-W-141-PL pipeline will be managed in the CP-LS-3 EU.

[2] Part of the 200-UW-1 OU was assigned to the 200-WA-1 OU that was established per Tri-Party Agreement (TPA) (Ecology et al., 1989a) Change Package M-15-09-02 (DOE/RL-2010-49, Draft B, p. 1-15).

[3] Inventories are provided in the 200-UW-1 Focused Feasibility Study (FFS) (DOE/RL-2003-23, Rev. 0) for some of the CP-LS-3 EU waste sites (that are now part of the 200-WA-1 OU); however, these sites also have inventories in SIM, Rev. 1 (Corbin, et al. 2005). No detailed inventory information for individual waste sites was provided in the Draft Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the 200-WA-1 and 200-BC-1 Operable Units (DOE/RL-2010-49, Draft B). For the sake of consistency, inventories in SIM, Rev. 1 are used for this evaluation. The

- Groundwater underlying the area (200-UP-1 [GW] OU / 200-UP GW Interest Area (GWIA)). The 200-UP-1 OU/200-UP GWIA was addressed in the CP-GW-2 EU (Appendix D.6)[4].

The primary contaminants listed in the SIM, Rev. 1 (Corbin, et al. 2005) for the CP-LS-3 EU include:[5]

- *Radionuclides*: tritium (H-3), Co-60, Sr-90/Y-90, Tc-99, Cs-137/Ba-137m, U-All isotopes, Pu-All isotopes
- *Chemicals*: Cr/Cr-VI, Hg, nitrates (NO_3), lead (Pb), U-Total, and tributyl phosphate (TBP)

Brief Narrative Description

The 200-WA-1 OU (where part of the 200-UW-1 OU was assigned to the 200-WA-1 OU, including some of the CP-LS-3 EU waste sites) is part of the Hanford 200 Area Site, which is on the EPA National Priority List (NPL) (DOE/RL-2011-56, Rev. 1). This OU consists of waste sites in the 200 West Inner Area not already assigned to other OUs. The CP-LS-3 EU waste sites primarily consist of liquid waste disposal sites associated with 221-U Facility operations and a few solid waste sites such as debris piles and a burial trench (that are not captured by the SIM, Rev. 1). Liquid waste disposal sites include cribs, trenches, French drains, septic systems, and unplanned release sites, one underground settling tank (241-U-361), and one underground pipeline (200-W-42 Vitrified Clay Pipe) with significant near-surface vadose zone contamination (UPR-200-W-163). The primary contaminants include H-3, Co-60, Sr-90, Tc-99, Cs-137, isotopes of uranium and plutonium, Cr, mercury (Hg), NO_3, Pb, and TBP. All current land-use activities in the 200-West and 200-East Areas (where the CP-LS-3 is located) are *industrial* in nature (Hanford 200-Area ROD[6]). Because the 200-UW-1 OU contained waste sites in common with the CP-LS-3 EU, the four remedial alternatives considered in the 200-UW-1 Focused Feasibility Study (FFS) are considered pertinent; these alternatives include (DOE/RL-2003-23, Rev. 0; DOE/RL-2003-24, Rev. 0):[7] i) No Action, ii) Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation, iii) Removal,

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216-U-4A/B, 216-U-7, and 216-U-10 waste sites were excluded from CP-LS-3 and included in other EUs (namely, CP-DD-3 and CP-LS-5).

[4] The final groundwater analysis was performed using the corresponding 200-UP GW Interest Area (200-UP GWIA). There is a one-to-one correspondence between GW OUs and GWIAs although the boundaries and monitoring wells can, and often do, differ (DOE/RL-2016-09, Rev. 0). Note the CP-LS-3 EU waste sites straddle the 200-UP and 200-ZP groundwater interest areas (GWIAs).

[5] For radionuclides, those are listed if the total activity from the SIM, Rev. 1 exceeds 0.1 Ci or if they are listed in Table 6.1 in the Methodology Report (CRESP 2015a) and have a non-zero total activity. Unlike for the Interim Report (CRESP 2015b), the activities for all available uranium and plutonium isotopes were summed. Sm-151 satisfied these guidelines but was not listed in Table 6.1 (CRESP 2015a) so it is not considered here. For chemicals of potential concern, those are listed if the total mass from the SIM, Rev. 1 (Corbin, et al. 2005) exceeds 1 kg or if they are listed in Table 6.1 (CRESP 2015a) and have a non-zero total mass. Bismuth (Bi) and normal paraffin hydrocarbon (NPH) satisfied these guidelines but were not listed in Table 6.1 (CRESP 2015a) so they are not considered here. As indicated above, there were several WIDS codes that were included in the DataSheets for multiple EUs; those WIDS codes with non-zero inventory were included in only a single EU for evaluation purposes (and to not double count inventory).

[6] http://www.epa.gov/region10/pdf/sites/hanford/200/hanford_200_rod.pdf

[7] The 200-UW-1 OU includes many of the CP-LS-3 EU waste sites and thus the detailed analysis provided of the remedial alternatives considered is assumed relevant. These alternatives are used instead of those general alternatives mentioned in the Evaluation Unit Disposition Table (Appendix B) for this EU. Note these remedial alternatives capture those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU.

Treatment, and Disposal, and iv) Engineered Barrier. All four (future) land-use scenarios listed in the Comprehensive Land Use Plan (CLUP) indicate that the 200-West and 200-East Areas are denoted *Industrial-Exclusive* (DOE/EIS-0222-F).

SUMMARY TABLES OF RISKS AND POTENTIAL IMPACTS TO RECEPTORS

Table G.5.3-1 provides a summary of nuclear and industrial safety related risks to humans and impacts to important physical Hanford Site resources.

Human Health

A Facility Worker is deemed to be an individual located anywhere within the physical boundaries of the U Plant Cribs and Ditches Area (CP-LS-3) area; a Co-located Person (CP) is an individual located 100 meters from the physical boundaries of the U Plant Cribs and Ditches Area; and the Public is an individual located at the closest point on the Hanford Site boundary not subject to DOE access control. The nuclear-related risks to humans are based on unmitigated (unprotected or controlled conditions) dose exposures expressed in a range of from *Not Discernible* (*ND*) to *High*. The estimated mitigated exposure, which takes engineered and administrative controls and protections into consideration, is shown in Table G.5.3-1 in parentheses.

Groundwater and Columbia River

Direct impacts to groundwater resources and the Columbia River have been rated based on available information for the current status and estimates for future time periods. These impacts are also expressed in a range of from *Not Discernible* (*ND*) to *Very High*.

Ecological Resources

The risk ratings are based on the degree of physical disruption (and potential additional exposure to contaminants) in the current status and as a potential result of remediation options.

Cultural Resources

No risk ratings are provided for Cultural Resources. The Table identifies the three overlapping Cultural Resource landscapes that have been evaluated: Native American (approximately 10,000 years ago to the present); Pre-Hanford Era (1805 to 1943) and Manhattan/Cold War Era (1943 to 1990); and provides initial information on whether an impact (both direct and indirect) is KNOWN (presence of cultural resources established), UNKNOWN (uncertainty about presence of cultural resources), or NONE (no cultural resources present) based on written or oral documentation gathered on the entire EU and buffer area. Direct impacts include but are not limited to physical destruction (all or part) or alteration such as diminished integrity. Indirect impacts include but are not limited to the introduction of visual, atmospheric, or audible elements that diminish the cultural resource's significant historic features. Impacts to Cultural Resources as a result of proposed future cleanup activities will be evaluated in depth under Section 106 of the National Historic Preservation Act (16 USC 470, et. seq.) during the planning for remedial action.

Table G.5.3-1. Risk Rating Summary (for Human Health, unmitigated nuclear safety basis indicated, mitigated basis indicated in parentheses (e.g., "Very High" (Low)).

Population or Resource		Evaluation Time Period – Active Cleanup (to 2064): **Current Condition:** Monitoring and maintenance	Evaluation Time Period – Active Cleanup (to 2064): **From Cleanup Actions:** Four alternatives considered
Human Health	Facility Worker	***Not Discernible (ND)-Low*** *(ND-Low)*	***Proposed Alternatives*: *ND-Low (No Action) to Low-High (RTD)*** (*ND-Low to Low (RTD)*)
	Co-located Person	***ND-Low*** *(ND-Low)*	***Proposed Alternatives: ND-Low*** (*ND* to *Low*)
	Public	***ND*** (*ND*)	***Proposed Alternatives*: *ND*** (*ND*)
Environmental	Groundwater (A&B) from vadose zone[a]	*High* – U(tot) *ND* – Sr-90[c] *Low* – other PCs **Overall**: *High*	*High* – U(tot)[d] *ND* – Sr-90[c] *Low* – other PCs **Overall**: *High*
	Columbia River from vadose zone[a]	Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*	Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*
	Ecological Resources[b]	*Low*	Estimated to be *Low* to *Medium*.[e]
Social	Cultural Resources[b]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Known **Manhattan/Cold War** Direct: Known Indirect: Known	Estimated to be: [e] **Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Known **Manhattan/Cold War** Direct: Known Indirect: Known

a. Threat to groundwater or the Columbia River from Group A and B primary contaminants (PCs) (Table 6-1, CRESP 2015a) remaining in the vadose zone. Threats from plumes associated with the U Plant Cribs and Ditches EU are described in **Part V** with additional information provided in Appendix G.6 (CP-GW-2) for the 200-UP Groundwater Interest Area (GWIA).

b. For both Ecological and Cultural Resources, see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report.

c. These ratings are for PCs with reported inventories (Table G.5.3-2 through Table G.5.3-4). (See **Parts V** and **VI** for additional details.) The Sr-90 disposed of in the U Plant Cribs and Trenches EU would translate to a *Medium* rating; however, there is no current Sr-90 plume in the 200-UP GWIA, and it would likely require more than 150 years to reach groundwater in a sufficient amount to exceed the drinking water standard over an appreciable area (**Part V**). The Sr-90 rating after the Active Cleanup period is *Low* to account for uncertainties.

d. As described in **Part V**, there is a current total uranium plume associated with the CP-LS-3 EU waste sites. Uranium in groundwater is being treated using the U Plant area Pump & Treat system that began operations in

2015 (DOE/RL-2016-09, Rev. 0); however, the treatment of groundwater would not impact the threat or thus rating associated with the remaining vadose zone inventory.

e. No cleanup decisions have been made for this EU.

SUPPORT FOR RISK AND IMPACT RATINGS FOR EACH POPULATION OR RESOURCE

Human Health

There is no Documented Safety Analysis (DSA) or hazard analysis for the CP-LS-3 waste sites because these sites do not currently satisfy the requirements for performing these types of analyses. Thus evaluations of risk for this type of site (i.e., a legacy site) are often more qualitative in nature than those with a formal safety or hazard analysis.

<u>Current</u>

Facility workers are at risk when working near or within those areas with contaminated soil. Exposure to contaminants is limited because contaminated soils and groundwater are located below grade. However, during certain *monitoring* and *characterization* activities (e.g., drilling and sampling), there may be the potential for exposure to hazardous and radioactive contaminants; however, the potential exposure would be small and limited in duration. The workforce involved with characterization activities (denoted a Facility worker) would thus have an unmitigated *Not Discernible* (*ND*) to *Low* risk rating (as described in **Part VI**). Risk to the Co-located Person (who is not in or near the contaminated soil) would also be rated *ND* to *Low.* The Public is rated as *ND* due to the remote distance to the site, depth from ground surface to soil contamination, and depth to groundwater contamination.

Unmitigated Consequences: Facility Worker – *ND* to *Low*, CP – *ND* to *Low*; Public – *ND*

Mitigation: The Department of Energy (DOE) and contractor site-specific safety and health planning that includes work control, fire protection, training, occupational safety and industrial hygiene, emergency preparedness and response, and management and organization—which are fully integrated with nuclear safety and radiological protection—have proven to be effective in reducing industrial accidents at the Hanford Site to well below that in private industry. Further, the safety and health program must effectively ensure that ongoing task-specific hazard analyses are conducted so that the selection of appropriate PPE can be made and modified as conditions warrant. Task-specific hazard analyses must lead to the development of written work planning documents and standard operating procedures (SOPs) that specify the controls necessary to safely perform each task, to include continuous employee exposure monitoring. Finally, Institutional Controls (ICs) will be used to control access to residual contaminants in soil and groundwater as long as they exceed the cleanup levels (CULs). Thus resulting Facility worker risks would remain rated as *ND* to *Low*; ratings for others also remain the same.

Mitigated Consequences: Facility Worker – *ND* to *Low*, CP – *ND* to *Low*; Public – *ND*

<u>Risks and Potential Impacts from Selected or Potential Cleanup Approaches</u>

The cleanup alternatives considered range from no action (monitoring and natural attenuation) to significant actions, including installation of an engineered barrier or removal, treatment, and disposal (RTD) (DOE/RL-2003-23, Rev. 0; DOE/RL-2003-24, Rev. 0). Thus impacts to Facility workers (i.e., those performing the cleanup actions) from potential cleanup approaches would vary significantly. As described below (**Part VI**), the risk ratings for Facility workers range from *ND-Low* (No Action) to *Low-High* (RTD) based on the action(s) that would be taken. Ratings for other receptors would not be impacted.

Unmitigated Risk: Facility Worker – *ND-Low* (No Action) to *Low-High* (RTD); CP – ND to *Low*; Public – ND

Mitigation: See description in **Part VI**. Thus resulting Facility worker risks are rated as *Low* for active cleanup actions (RTD) and *ND-Low* for other actions; others remain the same.

Mitigated Risk: Facility Worker – *ND-Low* to *Low* (RTD); CP – *ND-Low*; Public – *ND*

Groundwater, Vadose Zone, and Columbia River

Current

The CP-LS-3 EU straddles an area including parts of both the 200-UP and 200-ZP groundwater interest areas (GWIAs) that are described in the CP-GW-2 EU (Appendix D.6). The saturated zone beneath the vicinity of the CP-LS-3 (U Plant Cribs and Ditches) area has elevated levels of chromium, nitrate, Tc-99, uranium (total), carbon tetrachloride (CCl_4), trichloroethene (TCE), and I-129 based on the 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html); sites within the CP-LS-3 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). The current threats to groundwater and the Columbia River from contaminants already in the groundwater are evaluated as part of the CP-GW-2 EU (Appendix D.6). However, current threats to groundwater corresponding to only the CP-LS-3 EU contaminants *remaining* in the vadose zone (Table G.5.3-5) has an overall rating of *High* (based on total uranium) as described in **Part V**. Contaminated groundwater is treated in the 200-UP GWIA using the WMA S-SX groundwater extraction system[8], the U Plant area P&T system (uranium plume linked to CP-LS-3 waste sites), and the I-129 plume hydraulic control system and in the 200-ZP GWIA using the 200 West Pump and Treat (P&T) system[9] (DOE/RL-2016-09, Rev. 0). As indicated in **Part V**, only 200-UP plumes have been linked to CP-LS-3 waste sites. Threats from contaminated groundwater in the area to contaminate additional groundwater or the Columbia River are evaluated as part of the CP-GW-2 EU (Appendix D.6).

For the 200-UP and 200-ZP GWIAs (in 200 West), no plume currently emanating from the CP-LS-3 waste sites intersects the Columbia River at concentrations exceeding the corresponding water quality standard (WQS) as described in **Part V**. Thus current impacts to the Columbia River benthic and riparian ecology would be rated as *Not Discernible* (*ND*). Furthermore, the large dilution effect of the Columbia River on contamination from the seeps and groundwater upwellings also results in *ND* ratings. Thus the overall rating for the Columbia River during the Current period is *ND*.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

As described in **Part VI**, the remedial actions being considered for the CP-LS-3 EU waste sites include i) No Action; ii) Maintain Existing Soil Cover; iii) Removal, Treatment, and Disposal; and iv) Engineered Barrier; however, no final cleanup decisions have been made. Furthermore, no cleanup decisions have been made for the deep vadose zone (200-DV-1), including the CP-LS-3 EU contaminants in the deep vadose zone. Because no final cleanup decisions have been made, there is no way to definitively determine the risks and potential impacts to protected resources (groundwater and Columbia River). However, final cleanup decisions will be made to be protective of human health and the environment and thus it is likely that at least some vadose contamination will be removed to satisfy remedial goals and a cover will be installed (at least in places) to limit infiltrating water that tends to be the primary motive force to mobilize contamination in the vadose zone. Thus even though there are risks to workers associated with the cleanup of the CP-LS-3 waste sites (described above and in **Part VI**), there is unlikely

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[8] The WMA S-SX groundwater extraction system began operations in 2012 where extracted contaminated water is pumped to the 200 West P&T for treatment (Section 11.12.2, DOE/RL-2016-09, Rev. 0).

[9] Soil vapor extraction was used between 1992 and 2012 to remove carbon tetrachloride vapors migrating through the vadose zone into 200-ZP groundwater (Section 12.10.2, DOE/RL-2016-09, Rev. 0).

any discernible impact from likely cleanup actions on groundwater or the Columbia River (and thus no changes were made to current ratings to account for uncertainties).

Contaminants from the CP-LS-3 EU waste sites are currently impacting the vadose zone and groundwater; treatment using the treatment processes mentioned in the previous section is not predicted to decrease all concentrations to below thresholds before the Active Cleanup phase commences although there should be significant decreases in contaminant levels. Secondary sources in the vadose zone also threaten to continue to impact groundwater in the future, including the Active Cleanup period[10]. The *High* rating associated with the CP-LS-3 EU waste sites (Table G.5.3-5) is associated with total uranium that could potentially continue to impact the 200-UP GWIA (which is part of CP-GW-2, Appendix G.6). As described in the TC&WM EIS and summarized in **Part V**, there appears to little impact from radioactive decay (since total uranium is the risk driver) but a significant impact from recharge rate; thus ratings are changed to *Low after* the Active Cleanup period. Uranium (and other contaminants) are being treated in the 200-UP GWIA using the U Plant area P&T system that is assumed effective for the current large total uranium plume associated with the CP-LS-3 waste sites.

There would not be a sufficient impact on peak concentrations in near-shore region of the Columbia River during or after cleanup to modify ratings (which are already *ND*). Thus ratings for current threats in Table G.5.3-5 would not be modified except for Sr-90 that would be changed from *ND* to *Low* after the Active Cleanup Period (to address uncertainty) as described in **Part V**. The ratings for the remaining Group A and B primary contaminants remain unchanged (*Low*) as in Table G.5.3-5 to address uncertainties. The overall rating thus remains *High* during the Active Cleanup period.

Ecological Resources

<u>Current</u>

4% of EU and 33% of the buffer is level 3 or greater. Low impacts are based on truck traffic and herbicide applications.

<u>Risks and Potential Impacts from Selected or Potential Cleanup Approaches</u>

No cleanup decisions have been made for the deep vadose zone, and as a result, the potential effects of cleanup on ecological resources is uncertain for the active cleanup evaluation period. Cleanup decision for surface may change based on cleanup for deep vadose zone and as a result, the potential effects of cleanup on ecological resources is uncertain for the active cleanup evaluation period. The range of plausible remediation options increases the uncertainty in estimating the impacts to ecological resources. Reducing impacts to medium risk is possible if cleanup activity is focused within in the existing EUs, and staying away from the eastern portion of the buffer area.

[10] Note that Sr-90, which has a relatively large remaining vadose zone source (relative to a 8 pCi/L drinking water standard), is not considered a significant threat to groundwater due to its limited mobility in the Hanford subsurface and decay. See **Part V** for details.

Cultural Resources

Current

Area is heavily disturbed and only small portions have been inventoried for archaeological resources, however, it has potential to contain intact archaeological resources on the surface and/or subsurface. Area is culturally sensitive based on historic land use in the area. National Register eligible property within 500 meters of the EU. Two TCPs within the viewshed of the EU.

Manhattan Project/Cold War Era significant resources have been mitigated.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

No cleanup decisions have been made for the deep vadose zone, and archaeological investigations and monitoring may need to occur prior to remediation. Although the area is heavily disturbed, based on geomorphological indicators, there is a moderate potential for intact archaeological resources. Remediation disturbance may result in impacts to archaeological resources if they are present in the subsurface. Permanent indirect effects to viewshed are possible from capping.

Manhattan Project/Cold War Era significant resources have been mitigated.

Considerations for Timing of the Cleanup Actions

The saturated zone beneath the CP-LS-3 (U Plant Cribs and Ditches) area is approximately 255 ft below ground surface and currently has elevated levels of chromium, nitrate, Tc-99, uranium (total), carbon tetrachloride (CCl_4), I-129, and trichloroethene (TCE) based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Sites within the CP-LS-3 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0) and are likely currently contributing contamination to the vadose zone. Monitoring and treatment of groundwater is being conducted within the 200-UP GWIA (via the WMA S-SX groundwater extraction system with treatment in the 200 West Pump and Treat facility, the U Plant area P&T system for the uranium plume, and the I-129 plume hydraulic control system), which is described as part of the CP-GW-2 EU (Appendix D.6). Treatment efforts indicate a general downward trend in contaminant concentrations; however, some plume areas have increased (e.g., carbon tetrachloride, chromium, and TCE in 200-ZP and all plumes except for nitrates and uranium in 200-UP) and concentrations continue to exceed cleanup levels. Thus additional cleanup actions are likely warranted for this EU.

There is potential for additional contaminant release and migration through the vadose that may eventually impact groundwater as cleanup activities are delayed. There is also potential risk from direct radiation to workers (and ecological receptors) from routine maintenance operations. However, there would be no *additional* risk to facility workers, co-located persons, or the public if cleanup is delayed.

Near-Term, Post-Cleanup Risks and Potential Impacts

Groundwater: During the Near-term, Post-Cleanup period (described in **Parts V** and **VI** and Table G.5.3-6), the ratings for the Group A and B primary contaminants are *Low* to account for expected treatment effectiveness while also addressing uncertainties.

Columbia River: As indicated in **Part V**, no radionuclides or chemicals from the 200 West Area (that includes the CP-LS-3 EU waste sites) are predicted to have concentrations exceeding screening values in this evaluation period. Thus the rating will not be modified and all ratings are *Not Discernible* (*ND*) as is the overall rating (Table G.5.3-6).

PART II. ADMINISTRATIVE INFORMATION

OU AND/OR TSDF DESIGNATION(S)

CP-LS-3 EU. The *Operable Unit Cross-Walk* in Attachment 1 indicates 200-DV-1 and 200-WA-1. Other Operable Units mentioned in Attachment 1 (for WIDS codes included in the evaluation) are 200-IS-1, 200-CW-1, and 200-OA-1. The CP-LS-3 wastes sites straddle the 200-UP and 200-ZP groundwater interest areas (GWIAs) that correspond to the 200-UP-1 and 200-ZP-1 groundwater (source) operable units.

COMMON NAME(S) FOR EU

U Plant Cribs and Ditches

KEY WORDS

U Plant Cribs and Ditches, U Plant, Central Plateau, 200 Area, 200-WA-1, 200-UW-1, 200-UP, 200-ZP

REGULATORY STATUS:

Regulatory basis

The Hanford Federal Facility Agreement and Consent Order (also known as the Tri-Party Agreement or TPA) (Ecology et al., 1996) identifies the responsibilities of DOE, EPA, and the Washington State Department of Ecology under Section 120, "Federal Facilities," of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERLCA) to jointly administer remedial actions on the Hanford Site (DOE/RL-2010-49, Draft B). The CERCLA process is clearly established and described in detail at: www.epa.gov/superfund.

The TPA is a living document incorporating the remedial investigations (RIs), decisions, and actions agreed upon by DOE, EPA, and Ecology. DOE is the lead agency responsible for the remedial process at the Hanford Site, involving conducting an RI/FS, developing a plan and record of decision (ROD), and performing the remedial actions. Planning follows EPA guidance for the RI/FS, which are intended to meet RCRA facility investigation/corrective measures study (RFI/CMS) requirements. Finally, the TPA requires that the technical requirements of the Resource Conservation and Recovery Act (RCRA) corrective action process be fulfilled (DOE/RL-2010-49, Draft B).

The CERCLA process for the remediation and closure of the 200-WA-1 (formerly contained within the 200-UW-1 OU and which contain many of the CP-LS-3 waste sites) and 200-BC-1 OUs consists of the following major activities (represented as documents):

- Develop an RI/FS work plan and RI/FS report.
- Develop a final proposed plan.
- Develop and approve a ROD.
- Develop a final remedial design/remedial action (RD/RA) work plan.
- Develop a remedial action report.
- Develop and implement a monitoring program (if required).
- Perform a cyclic 5-year review of the remedy effectiveness, as required by CERCLA.

A work plan has been developed identifying the activities needed to complete the RI/FS and make a remedial decision for the 200-WA-1 and 200-BC-1 OU waste sites. A proposed plan summarizing the

RI/FS and identifying the preferred remedial alternative will be issued for public review and comment. The Record of Decision (ROD) will be issued by EPA and signed by DOE, EPA, and Ecology.

There are also CP-LS-3 waste sites included in the 200-MG-1 (DOE/RL-2008-44, Rev. 0) and 200-MG-2 OUs (DOE/RL-2008-45, Rev. 0):

- 200-MG-1 waste sites are the UPR-200-W-39, -41, -44, -71, and -165 unplanned releases.
- 200-MG-2 waste sites are the 207-U retention basin, 216-U-14 ditch, and UPR-200-W-111, -112 unplanned releases.

Action memoranda have been issued for non-time-critical actions for selected sites within the 200-MG-1 and 200-MG-2 OUs (DOE/RL-2009-37, Rev. 0; DOE/RL-2009-48, Rev. 0; DOE/RL-2009-86, Rev. 0). None of the 200-MG-1 waste sites selected for action are in the CP-LS-3 EU. All four of the 200-MG-2 waste sites in the CP-LS-3 EU are slated for action (DOE/RL-2009-37, Rev. 0).

There is also deep vadose zone contamination associated with CP-LS-3 waste sites (DOE/RL-92-16, Rev. 0) that will be treated as part of the 200-DV-1 OU. However, no remedial decisions have been made for the deep vadose zone and thus no regulatory documents are available (DOE/RL-2014-11, Rev. 0).

Applicable regulatory documentation

- DOE/RL-91-52, Rev. 0, *U Plant Source Aggregate Area Management Study Report*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- DOE/RL-92-16, Rev. 0, *200 West Groundwater Aggregate Area Management Study Report*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- BHI-00174, Rev. 00, *U Plant Aggregate Area Management Study Technical Baseline Report*, Bechtel Hanford, Inc., Richland, Washington.
- DOE/RL-95-13, Rev. 0, *Limited Field Investigation for the 200-UP-2 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
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- DOE/RL-2005-71, Rev. 0, *Action Memorandum for the Time-Critical Removal Action for Support Activities to the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- DOE/RL-2006-75, Rev. 1, *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- DOE/RL-2007-34, Rev. 0, *Regulatory Criteria for the Selection of Vadose Zone Modeling in Support of the 200-UW-1 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.

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- DOE/RL-2009-37, Rev. 0, *Action Memorandum for Non-Time-Critical Removal Action for 200-MG-2 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington. [Involved 207-U, 216-U-14, UPR-200-W-111, and UPR-200-W-112 waste sites]
- DOE/RL-2009-94, Rev. 0, *216-U-8 Crib and 216-U-12 Crib Vadose Zone Characterization Sampling and Analysis Plan*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
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- DOE/RL-2010-49, Draft B, *Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- DOE/RL-2011-102, Draft A, *Remedial Investigation/Feasibility Study and RCRA Facility Investigation/Corrective Measures Study Work Plan for the 200-DV-1 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.
- DOE/RL-2011-104, Rev. 0, *Characterization Sampling and Analysis Plan for the 200-DV-1 Operable Unit*, U.S. Department of Energy, Richlands Operations Office, Richland, Washington.

Applicable Consent Decree or TPA milestones

Federal Facility Agreement and Consent Order, 1989 and amended through June 16, 2014 (Ecology et al., 1996):

- Milestone M-015-91B; Lead Regulatory Agency: EPA. *Submit Feasibility Study Report(s) and Proposed Plan(s) for the 200-BC-1/200-WA-1 operable units (200 West Inner Area) to EPA.* Due Date: 07/31/2021.
- Milestone M-015-98; Lead Regulatory Agency: EPA. *Complete remedial investigation of U Plant related waste sites located in 200-WA-1 in accordance with the WA-1 RI/FS Work Plan*. Due Date: 06/30/2019.
- Milestone M-015-110B; Lead Regulatory Agency: Ecology. *Submit Corrective Measures Study & Feasibility Study Report and Proposed Plan/Proposed Corrective Action Decision for the 200-DV-1 OU to Ecology.* Due Date: 09/30/2023.
- Milestone M-016-193; Lead Agency: EPA. *Complete the remedial design investigation of the southeast chromium plume, including the installation of new wells and evaluation of groundwater monitoring data and install monitoring wells needed for remedy performance monitoring as defined in the 200-UP-1 RD/RA WP*. Due Date: 09/30/2017.

Risk Review Evaluation Information

Completed

February 24, 2017

Evaluated by

K. G. Brown

Ratings/Impacts Reviewed by

Kathryn Higley

PART III. SUMMARY DESCRIPTION

CURRENT LAND USE

DOE Hanford Site for industrial use. All current land-use activities in the 200-West Area are *industrial* in nature (EPA 2012).

DESIGNATED FUTURE LAND USE

Industrial-Exclusive. All four land-use scenarios listed in the Comprehensive Land Use Plan (CLUP) indicate that the 200-West Area is denoted *Industrial-Exclusive* (DOE/EIS-0222-F). An industrial-exclusive area is "suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, and nonradioactive wastes" (DOE/EIS-0222-F).

PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

The CP-LS-3 waste sites primarily consist of *liquid waste disposal* sites associated with 221-U Facility operations (see CP-DD-3 EU) and a few solid waste sites such as debris piles and a burial trench. The CP-LS-3 liquid waste disposal sites include cribs, trenches, French drains, septic systems, unplanned release sites, one underground settling tank (241-U-361), and significant near-surface vadose zone contamination (UPR-200-W-163) associated with an underground pipeline (200-W-42 Vitrified Clay Pipe) that is not included in this EU.

High-Level Waste Tanks and Ancillary Equipment

Note that the CP-LS-3 EU waste sites include one pipeline related to the Single Shell Tank System (DOE/RL-2010-114, Draft A, p. A-22) and thus the Tank and Waste Farms EUs (Appendix E.1 through Appendix E.11). This and potentially other pipeline and associated equipment waste sites were considered evaluated as part of the Tank Waste and Farms EU (Appendix E.1 through Appendix E.11). Any remaining pipeline and related wastes sites will not be evaluated further due to a lack of inventory information. Known leaks from pipelines and associated equipment are managed as UPRs.

Groundwater Plumes

The saturated zone beneath the CP-LS-3 (U Plant Cribs and Ditches) area is approximately 255 ft below ground surface and currently has elevated levels of chromium, nitrates, Tc-99, uranium (total), carbon tetrachloride (CCl_4), trichloroethene (TCE), and I-129 based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). However, there are no reported CCl_4 or TCE inventories for the CP-LS-3 waste sites (Table G.5.3-4), and there are no CP-LS-3 sources of chromium linked to the groundwater plumes (DOE/RL-2016-09, Rev. 0). The 200 West Area plumes are described in detail in the CP-GW-2 EU (Appendix D.6). Waste sites within the CP-LS-3 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0) and have been linked as sources for some plumes (e.g., uranium in the 200-UP GWIA) in the 200 West area (DOE/RL-2016-09, Rev. 0). Monitoring and treatment of groundwater is being conducted within the 200-UP (using the WMA S-SX groundwater extraction system, the U Plant area P&T system, and the I-129 plume hydraulic control system) and 200-ZP GWIAs (in the 200 West P&T facility), which are described as part of the CP-GW-2 EU (Appendix D.6).

Operating Facilities

Not applicable

D&D of Inactive Facilities

Not applicable

Location and Layout Maps

The 200-WA-1 OU (which contains many of the waste sites comprising the CP-LS-3 EU) is located in the Hanford Central Plateau Inner Area (shown in Figure G.5.3-1 and Figure G.5.3-2). The U Plant Cribs and Ditches (Figure G.5.3-3) are located in the south/eastern part of 200 West Area.

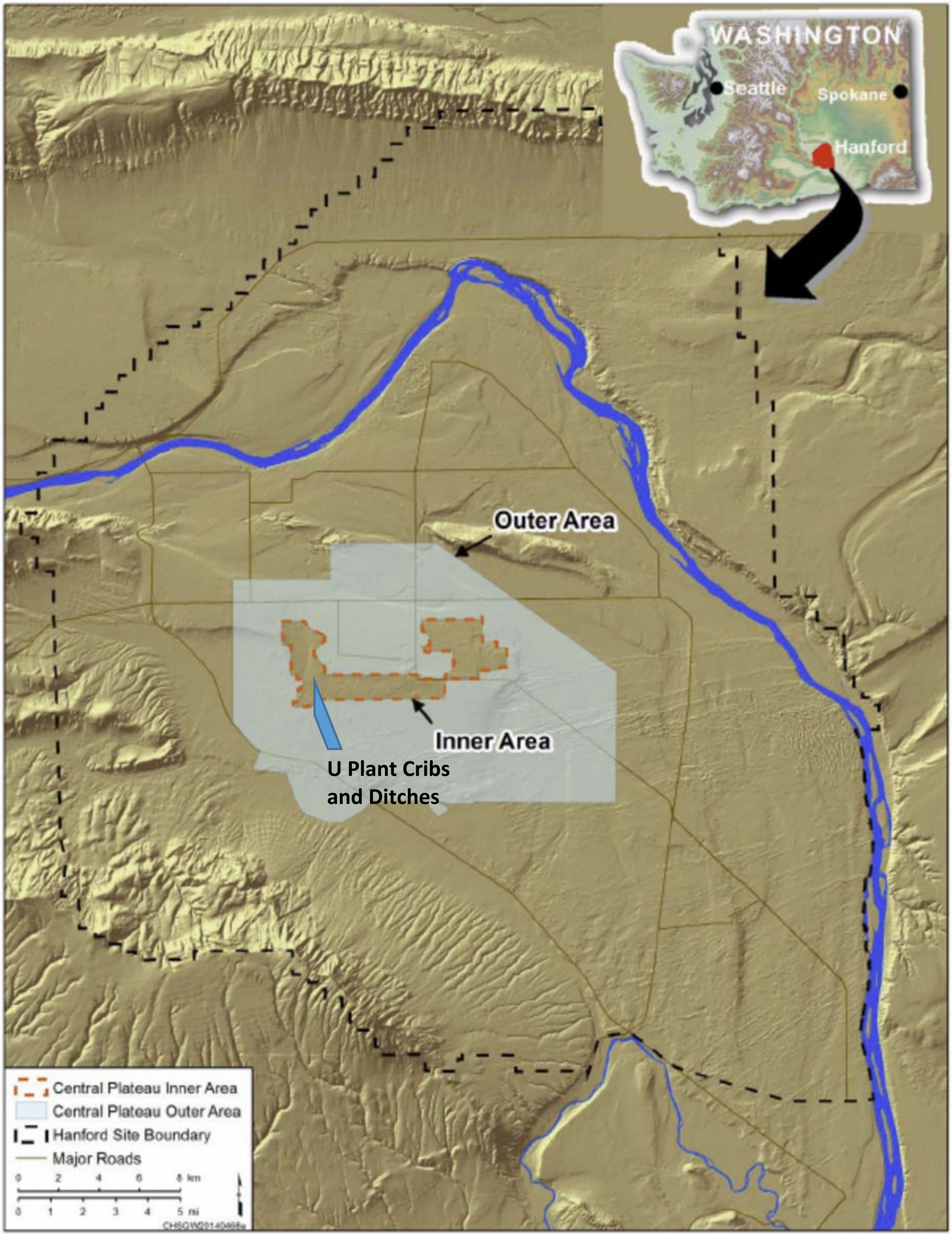

Figure G.5.3-1. The Hanford Site showing the Central Plateau Inner and Outer Areas (reproduced from (DOE/RL-2010-49, Draft B, p. 1-2))

Figure G.5.3-2. Operable Units in the Hanford Central Plateau Inner Area (reproduced from (DOE/RL-2010-49, Draft B, p. 1-10))

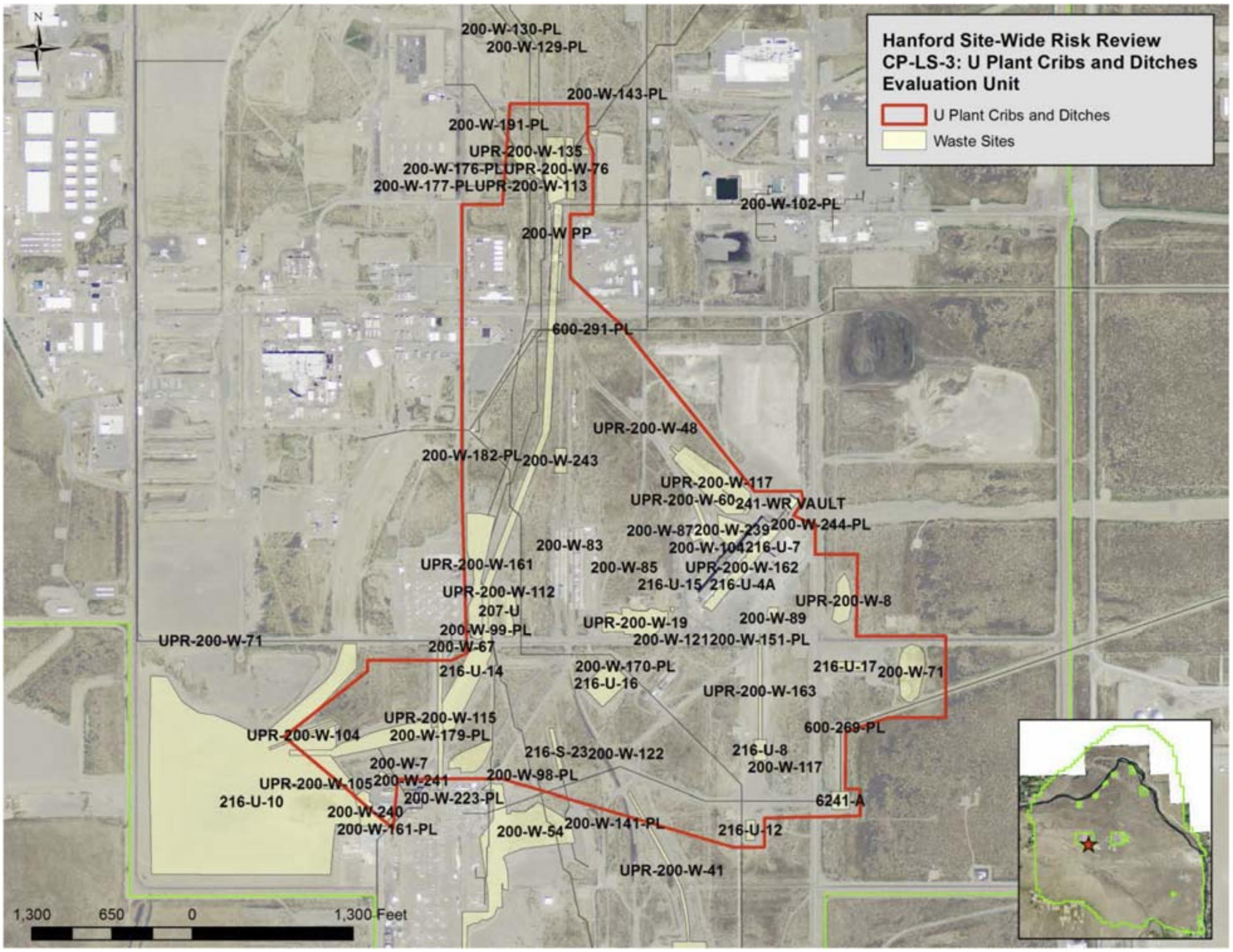

Figure G.5.3-3. CP-LS-3 (U Plant Cribs and Ditches) Site Location Map and WIDS Locations

PART IV. UNIT DESCRIPTION AND HISTORY

EU Former/Current Use(s)

The CP-LS-3 waste sites primarily consist of *liquid waste disposal* sites associated with 221-U Facility operations (see the CP-DD-3 EU described in Appendix F.8) and a few solid waste sites such as debris piles and a burial trench. The 221-U canyon facility was originally built to extract plutonium from fuel rods irradiated in Hanford Site reactors; however, it was never used for this purpose. Instead, the facility was converted to include a uranium recovery process for waste from other canyon facilities (EPA 2005, p. 2).

Legacy Source Sites

Sumps collected spilled liquids and other cell drainage and discharged the materials from the 221-U Facility to cribs (EPA 2012, p. 23). 221-U Building process wastes were discharged to various CP-LS-3 cribs (e.g., 216-U-1/2, 216-U-8, and 216-U-16) and other wastes sites. As indicated in Table G.5.3-2 through Table G.5.3-4, the U Plant Cribs and Ditches EU waste sites *with reported inventory data* consists of six cribs; two trenches; one ditch, basin, pond, and well; one miscellaneous underground storage tank (MUST); and seven unplanned releases (UPRs). These waste sites are considered representative of the major inventory sources and thus risks and potential impacts from this EU. For example, an evaluation was made of representative sites for remediation of the 200-UW-1 Operable Unit (OU) (DOE/RL-2003-24, Rev. 0); these sites included the 216-U-1&2, 216-U-8, and 216-U-12 cribs; 216-U-4 reverse well; and UPR-200-W-19 and UPR-200-W-163 UPRs[11].

GROUNDWATER PLUMES

The saturated zone beneath the CP-LS-3 area (U Plant Cribs and Ditches) is approximately 255 ft below ground surface and currently has elevated levels of chromium, nitrates, Tc-99, uranium, carbon tetrachloride (CCl_4), trichloroethene (TCE), and I-129 based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Associated plumes are described as part of the 200-UP and 200-ZP GWIAs described in CP-GW-2 EU (Appendix D.6). Sites within the CP-LS-3 EU, including 216-U-1&2, 216-U-8, 216-U-12, 216-U-16, 216-U-17, and 216-S-23 cribs; 216-U-4 reverse well; and 216-U-14 ditch[12] are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0); however, the inventory information in Table G.5.3-4 indicates that carbon tetrachloride (CCl_4) and trichloroethene (TCE) were not reported for the CP-LS-3 waste sites and CP-LS-3 waste sites have not been linked to the 200-UP GWIA chromium plume (DOE/RL-2016-09, Rev. 0). Monitoring and treatment of groundwater is being conducted within the 200-UP GWIA (using the WMA S-SX groundwater extraction system, U Plant area P&T system, and I-129 plume hydraulic control system) and in the 200-ZP GWIA (using the 200 West P&T facility). Only plumes in the 200-UP GWIA have been linked to CP-LS-3 waste sites.

D&D OF INACTIVE FACILITIES

Not applicable

ECOLOGICAL RESOURCES SETTING

Landscape Evaluation and Resource Classification

The U Plant Cribs and Ditches EU consists of a patchwork of level 2 successional habitat interspersed with level 0 and level 1 habitat resources associated with buildings, parking lots, waste sites and roads. The 129.3 acres of level 0 resources within this EU overlaps with 12.3 acres of level 0 habitat contained within the U Plant EU (Appendix J, Table J.12).

The amount and proximity of biological resources surrounding the U Plant Cribs and Ditches EU were examined within the adjacent landscape buffer area, which extends 3212 feet (979 m) from the geometric center of the EU (Appendix J, Figure J.14) Approximately 95% of the EU habitat is classified as level 2 or lower (level 0 and level 1 habitats comprise almost 50% of the EU).   Approximately 70% of the combined area of the EU and adjacent landscape buffer (3016 acres) (Appendix J, Table J.12) consists of level 0, 1, and 2 resources. The EU is contiguous with several small patches of level 3 habitat to the east,

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[11] The 216-U-4A French drain was included as a representative site in the analysis (and is included in Attachment 1); however, this waste site is now being evaluated in CP-LS-5 (Appendix G.6.1). The UPR-200-W-163 UPR is associated with the 200-W-42 vitrified clay pipeline, which is covered under the CP-LS-5 EU.

[12] The 216-U-4A/B and 216-U-7 French drains and 216-U-10 pond were also suspected of contributing to groundwater contamination; however, these sites are now considered as parts of other EUs.

but is surrounded by level 0 and 1 habitats interspersed with small patches of level 2 habitat (Appendix J, Figure J.14).

Field Survey

The U Plant Cribs and Ditches EU consists of a patchwork of successional habitat and heavily disturbed areas associated with buildings, parking lots, waste sites and roads. Graveled waste sites and dirt or gravel roads are sprayed with herbicides to prevent vegetation growth. PNNL biologists conducted pedestrian and vehicle surveys throughout the EU. Vegetation canopy cover was measured on transects in the level 3 habitat in the southwest corner of the EU. Canopy cover in level 2 habitats was estimated visually. Based on field observations, all patches of level 2 resources within the EU were considered part of one habitat area broken into smaller pieces by roads and pipelines. Table J.11 (Appendix J)**Error! Reference source not found.** provides average canopy cover for the level 2 patches within the EU, which are dominated by gray rabbitbrush (*Ericameria nauseousus*) with native and introduced forbs and grasses in the understory. Field data records documenting survey of the EU for each patch are included at the end the EU description in Appendix J.

Mature big sagebrush (*Artemisia tridentata*) provides approximately 5.5% canopy cover of climax shrubs in the level 3 area in the southwest corner of the EU, with a degraded understory dominated by bare ground and the introduced grass, cheatgrass (*Bromus tectorum*) (Appendix J, Table J.11). Other areas of level 3 biological resources are related to previously noted occurrences of Piper's daisy (*Eriogeron piperianus*), a species considered sensitive in the state of Washington. No Piper's daisy plants were found during the 2015 survey. A state-monitored species, Swainson's hawk (*Buteo swainsoni*), was observed soaring over the area. Other animal species or their sign include coyote (*Canis latrans*), unidentified lizards, Say's phoebe (*Sayornis saya*), western meadowlarks (*Sturnella neglecta*), lark sparrow (*Chondestes grammacus*) and mountain cottontail (*Sylvilagus nutalli*).

Cultural Resources Setting

Portions of the CP-LS-3, U Plant Cribs and Ditches EU have been inventoried for cultural resources under four reviews: HCRC#87-200-032 (Cadoret 1988), HCRC#93-600-004 (McIntire and Myers 1993), HCRC#94-200-097 (Crist 1994), and HCRC#2011-200-032 (Mendez 2011). None of these reviews resulted in the identification of cultural resources within the EU. It is unknown if an NHPA Section 106 review has been completed specifically for remediation of the CP-LS-3, U Plant Cribs and Ditches EU. It is unlikely that intact archaeological materials are present in the EU, both on the surface and in the subsurface, because the soils in the EU have been extensively disturbed.

Cultural resource documented within the CP-LS-3, U Plant Cribs and Ditches EU include segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required. In addition, 10 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District are located within the EU (all 10 are contributing properties within the Manhattan Project and Cold War Era Historic District, 1 with individual documentation required, and 9 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all applicable documentation requirements have been met for these properties. These buildings include those listed in the table below.

Table K.2 (Appendix K) has more information about the 10 buildings for National Register-eligible Manhattan Project and Cold War Era Historic buildings located within CP-LS-3, U Plant Cribs and Ditches EU**.**

Cultural resources documented within 500 meters of the CP-LS-3 U Plant Cribs and Ditches EU include a non-contributing segment of a National Register Eligible historic/ethnohistoric road/trail corridor. Additionally 28 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District have been documented within 500 meters of the EU (all 28 are contributing properties within the Manhattan Project and Cold War Era Historic District, 18 with documentation required, and 10 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all applicable documentation requirements have been met for these properties.

Historic maps and aerial imagery do not indicate any cultural features within the EU, but do show a historic/ethnohistoric trail/road corridor in the vicinity of the EU suggesting a low potential for archaeological resources associated with the Pre-Hanford Early Settlers/Farming Landscape to be present within the EU. Geomorphology indicates a moderate potential for the presence of Native American Precontact and Ethnographic cultural resources to be present within the CP-LS-3, U Plant Cribs and Ditches EU. However, extensive ground disturbance within the entire EU suggests a low potential for intact cultural resources at or below ground surface. Resources, if present, would likely be limited to area of intact or undisturbed soils.

Because of the potential for intact archaeological deposits within the EU, it may be appropriate to conduct surface and subsurface archaeological investigations in these areas prior to initiating any remediation activities. Indirect effects are always possible when TCPs are known to be located in the general vicinity. Consultation with Hanford Tribes (Confederated Bands of the Yakama Nation, Wanapum, Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce) and other groups associated with these landscapes (e.g. East Benton Historical Society, the Franklin County Historical Society and the Prosser Cemetery Association, the Reach, and the B-Reactor Museum Association) may be necessary to provide input on indirect effects to both recorded and potential unrecorded TCPs in the area and other cultural resource issues of concern.

PART V. WASTE AND CONTAMINATION INVENTORY

There are 22 waste sites in the CP-LS-3 EU that have reported inventory information in the TC&WM EIS (DOE/EIS-0391 2012) and in the SIM, Rev. 1 (Corbin, et al., 2005) (i.e., Table G.5.3-2 through Table G.5.3-4) and are considered representative of the major inventory sources and risks from this EU. These waste sites (with reported inventories) consist of one MUST; six cribs; two trenches; one pond, basin, ditch, and well; and seven UPRs.

The U Plant Area, which includes many of the CP-LS-3 EU waste sites, was divided into five distinct components (DOE/RL-2003-24, Rev. 0):

- 221-U Facility and related facilities where the 221-U Facility and related facilities are addressed in the CP-DD-3 (U Plant) EU (Appendix F.8).
- Facilities that are ancillary or related to the 221-U Facility that are addressed in the CP-DD-3 (U Plant) EU (Appendix F.8).
- Underground pipelines. It is assumed, for the purpose of this evaluation that the various pipelines in the CP-LS-3 EU have been addressed in the Tank Farm EU (Appendix E.1 through Appendix E.11).

- Soil waste sites (including those in the 200-UW-1 or 200-WA-1 OUs[13]). Inventories for the appropriate soil waste sites are taken from the Soil Inventory Model (SIM), Rev. 1 (Corbin, et al. 2005).
- Groundwater underlying the area (200-UP GWIA/200-UP-1 OU). The 200-UP-1 OU/200-UP GWIA was addressed in the CP-GW-2 EU (Appendix D.6)[14].

The 200-UW-1 OU addresses 33 soil waste sites that range from small (with surface area of ~2.7 m^2 [30 ft^2] and 1 m [3 ft] deep) to very large (with surface area of ~4,645 m^2 [50,000 ft^2] and 61 m [200 ft] deep). Many of the waste sites within the CP-LS-3 EU are also in the 200-UW-1 (or now 200-WA-1) OU. For example, (DOE/RL-95-13, Rev. 0)

- Each of the 216-U-1/2 Cribs is comprised of a 3.6 x 3.6 x 1.2 m (12 x 12 x 4 ft) deep wooden structure backfilled with native soil where overflow from the 216-U-1 Crib entered the 216-U-2 Crib. The cribs received wastewater from 1951 to 1967, including 4000 kg (8900 lbs) of uranium.
- The 216-U-8 Crib consists of three 4.9 x 4.9 x 3 m (16 x 16 x 10 ft) underground timber structures backfilled with gravel. The crib operated from 1952 until 1960 where is received approximately 379,000,000 L (100,000,000 gal) of acidic process condensate from the 221-U and 224-U Buildings, and the 291-U Stack Drainage System.
- The 216-U-12 Crib[15] consists of a 46-m (150-ft) long, gravel-filled drain field constructed in 1960 (when 216-U-8 Crib began to subside) and measuring 30 x 3 m (100 x 10 ft) at the base with earthen sides; the bottom 1.5 m (5 ft) is filled with layers of sand and gravel covered with a polyethylene barrier. The 216-U-12 Crib received approximately 150,000,000 L (40,000,000 gal) of liquid waste (Uranium-Oxide (UO3) Plant corrosive process condensate) during 28 years of use.
- The 216-U-16 Crib is a 19 m (62 ft) long, 58 m (191 ft) wide and 4.6 to 5.2 m (15 to 17 ft) deep, gravel-filled, drain field-type crib with no major structure. The crib operated from 1984 until 1987 and received approximately 4.09E+08 L (1.08E+08 gal) of UO3 Laboratory process condensate, 271-U Compressor cooling water, 221-U Building chemical sewer waste. By 1985, enough liquid waste had been discharged to the 216-U-16 Crib to create a perched groundwater zone that moved below the 216-U-1/2 Cribs and mobilized uranium, which entered the unconfined aquifer. Pump and treat techniques (ion exchange) were used at the 216-U-1/2 Cribs to treat groundwater (Baker et al. 1988).
- The 216-U-17 Crib is a drain field-type unit situated 5.5 m (18 ft) below the surface that was constructed in 1988 to replace the 216-U-12 Crib (and was operated until 1994), which had received its maximum allowed inventory of radioactive wastes. The 216-U-17 Crib is covered with a 6 µm (0.25 mil) PVC membrane vapor barrier and backfilled with native soil.

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[13] Part of the 200-UW-1 OU was assigned to the 200-WA-1 OU that was established per Tri-Party Agreement (TPA) (Ecology et al., 1989a) Change Package M-15-09-02 (DOE/RL-2010-49, Draft B, p. 1-15).

[14] The final groundwater analysis was performed using the corresponding GW Interest Area (GWIA) (200-UP). There is a one-to-one correspondence between GW OUs and GWIAs although the boundaries typically are different (DOE/RL-2016-09, Rev. 0). Note that the CP-LS-3 waste sites straddle the 200-UP and 200-ZP GWIAs.

[15] The 216-U-12 Crib is a RCRA TSD that was originally scheduled to undergo closure in 1994; however, decision makers identified the need to characterize the full thickness of the vadose zone beneath the 216-U-12 Cribs before making a final remedial decision (DOE/RL-2009-94, Rev. 0, p. v).

Approximately 4.97E+06 L (1.3E+06 gal) (DOE/RL-2010-49, Draft B, p. D-834) of 224-U Building process condensate is the only waste that was discharged to this crib.

- The 216-S-23 Crib consists of a gravel and fill structure and associated piping constructed to replace the 216-S-9 Crib (DOE/RL-2010-49, Draft B, p. D-319). The Crib operated from 1969 to 1972 and received approximately 34,000,000 L (8,994,709 gal) of REDOX process condensate from the 202-S building, including a total of approximately 300 kg (136 lb) of nitric acid as well as likely very small quantities of Co-60, Sr-90, Ru-106, and Cs-137.

CONTAMINATION WITHIN PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

The CP-LS-3 EU waste sites are primarily legacy source sites, and the reported inventory information is provided in Table G.5.3-2 through Table G.5.3-4. The one exception (with a reported inventory) is the 241-U-361 (MUST) Settling Tank, which is considered isolated from the vadose zone inventory, as described below.

Vadose Zone Contamination

Because the CP-LS-3 EU waste sites are primarily legacy sites that represent soil and other vadose zone contamination, the reported inventory information is provided in Table G.5.3-2 through Table G.5.3-4. However, because the 241-U-361 MUST, which is a reinforced concrete settling tank, is considered sufficiently isolated from the vadose zone[16], this inventory is considered not part of the vadose zone inventory for the purpose of this Review.

The inventories provided in Table G.5.3-2 through Table G.5.3-4 (minus those for 241-U-361) represent the reported contamination originally discharged (without decay correction[17]) to the vadose zone from the CP-LS-3 EU waste sites. These values are used to estimate the inventory remaining in the vadose zone using the process described in the Methodology Report (CRESP 2015a) for the 2013 groundwater plume information as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1. The focus in this section will be on the Group A and B contaminants (CRESP 2015a) in the vadose zone (with corresponding groundwater plumes) due to their mobility and persistence and potential threats to groundwater (a protected resource). To summarize (where current 200-UP/200-ZP GWIAs plumes for chromium, CCl_4, and TCE are not associated with the U Plant Cribs and Ditches EU waste sites as described below)[18]:

- *Chromium* – There are reported inventories for chromium in the CP-LS-3 waste sites (Table G.5.3-4) and current plumes in the 200-UP and 200-ZP GWIAs in the vicinity; however, none of these have been associated with the CP-LS-3 waste sites where the northern plume near the

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[16] There has been no indication of leaking from the 241-U-361 MUST although there was an overfill event in 1953 captured elsewhere as UPR-200-W-19 (DOE/RL-88-30, Rev. 23, p. 1294).

[17] As described in the Methodology Report (CRESP 2015a) values are typically not decay corrected because of the large uncertainties in many of the values used in the CRESP evaluations and the rough-order-of-magnitude evaluations presented in the Review. One exception, for example, is when evaluating long-term impacts to groundwater for Group A and B radionuclides (e.g., Sr-90) with half-lives that are relatively short relative to the evaluation period (CRESP 2015a).

[18] The plume information is primarily taken from PHOENIX (http://phoenix.pnnl.gov/apps/gw/phoenix.html) that show the 2014 groundwater plumes. These plumes were assumed representative of 2015 groundwater plumes.

241-S Tank Farm originated from an overfill event at tank S-104 between 1966 and 1970, the plume near the 241-SX Tank Farm from a 190,000 L (51,000 gal) leak from tank SX-115 in 1965 and the southeastern plume originated primarily from effluent disposed to the 216-S-20 Crib during the 1950s although discharges to the 216-S-10 Pond and Ditch and 216-S-19 Pond may also have contributed (DOE/RL-2016-09, Rev. 0, Sections 11.8.1&2; DOE/RL-2009-122, Rev. 0, p. 4-46). The inventory is dominated by the 216-U-1/2 and 216-U-4 Cribs.

- *Carbon tetrachloride (CCl_4) and trichloroethene (TCE)* – There are no reported vadose zone inventories for these contaminants for the CP-LS-3 waste sites (Table G.5.3-4).
- *I-129* – There are reported inventories for I-129 (Table G.5.3-2) as well as small and one large plume in the vicinity. The vadose zone inventory is small (0.013 Ci) and is dominated by one crib and one ditch.
- *Tc-99* – There are reported inventories for Tc-99 (Table G.5.3-3) as well as a series of plumes in the vicinity. The vadose zone inventory is dominated by two cribs.
- *Uranium* – There is a plume to the east of the 241-U tank farm and reported vadose zone inventories for uranium (Table G.5.3-3 and Table G.5.3-4). The vadose zone inventory (i.e., excluding that in the 241-U-361 MUST) is dominated by a series of cribs (216-U-1&2, 216-U-12, and 216-U-8).
- *Sr-90 and other Group A&B Primary Contaminants (PCs)* – There are no current plumes for Sr-90 or other Group A&B PCs not mentioned above (i.e., C-14, Cl-36, or CN) in the vicinity of CP-LS-3; however, there are reported vadose zone inventories for Sr-90 (Table G.5.3-3) and C-14 (Table G.5.3-2) but none for Cl-36 (Table G.5.3-2) or CN (Table G.5.3-4). The reported Sr-90 vadose zone inventory (i.e., outside of 241-U-361) is dominated by three cribs and two UPRs. The reported C-14 inventory is dominated by a ditch and a UPR; furthermore, the reported C-14 inventory is very small (0.011 Ci total), which may indicate why it has not been observed in groundwater in 2015 above the drinking water standard. The majority of the Sr-90 originally discharged into the vadose zone (via cribs and UPRs) would have had to travel through much of the vadose zone to impact groundwater. Using an analysis similar to that in Section 2.5 (Appendix E.2) for Sr-90 in the WMA T (200 West)[19], a Sr-90 plume is not expected in the next 150 years due to retardation in the vadose zone or afterwards due to radioactive decay (+99.9% reduction in Sr-90 inventory). Thus Sr-90 (and the remaining Group A and B PCs for the reasons mentioned above) are not considered significant threats to the Hanford groundwater during the first 150 years.

Using the process outlined in Chapter 6 of the Methodology Report (CRESP 2015a) for the 2013 groundwater results as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1, the remaining vadose zone inventories in Table G.5.3-5 are estimated by difference and used to calculate Groundwater Threat Metric (GTM) values for the Group A and B contaminants remaining in the vadose zone as illustrated in Table G.5.3-5. Note that the vadose zone (VZ) ratings range from *High* for total uranium to *Low* for the other Group A and B PCs with reported inventories with the exception of Sr-90. Because there is no current Sr-90 plume nor one expected for

[19] The analysis in Section 2.5 of Appendix E.2 for the WMA T is referenced instead of that for the more proximate WMA U (Appendix E.5) because the WMA T analysis is more detailed and is essentially repeated for the WMA U Sr-90 evaluation .

the next 150 years as described above, the current rating for Sr-90 is *Not Discernible* (*ND*). The overall current rating is defined as the highest over all the ratings and thus *High*.

Groundwater Plumes

Sites within the CP-LS-3 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0; DOE/RL-2003-24, Rev. 0) although (of the Group A and B primary contaminants) chromium, C-14, Tc-99, uranium, Sr-90, and I-129 (i.e., not CCl4 or TCE) have reported inventories for the CP-LS-3 waste sites (Table G.5.3-2 through Table G.5.3-4). Monitoring and treatment of groundwater is being conducted within the 200-UP GWIA (using the WMA S-SX groundwater extraction system, U Plant area P&T system, and I-129 plume hydraulic control system) and in the 200-ZP GWIA using the 200 West P&T facility; these actions are described as part of the CP-GW-2 EU (Appendix D.6). The saturated zone inventories related to the CP-LS-3 EU are provided in Table G.5.3-5; the process for deriving these inventories is described in CRESP Methodology Report (CRESP 2015a) originally for the 2013 groundwater plume information as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1.

In general the 2015 groundwater plumes are evaluated in separate EUs (see Appendix D.1 through Appendix D.6); however, portions of the groundwater plumes can be associated with the U Plant Cribs and Ditches EU based on source information in the Groundwater Monitoring Report (DOE/RL-2016-09, Rev. 0), and these partial plume areas will be evaluated to provide a better idea of the saturated zone versus remaining vadose zone threats to groundwater. The estimated inventory for the saturated zone contamination is provided in Table G.5.3-5 where Photoshop was used to estimate the fraction of plumes considered associated with the U Plant Cribs and Ditches EU (Attachment 6-4 in the Methodology Report (CRESP 2015a) as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1). This information is also used to estimate amounts treated and remaining in the vadose zone. For the groundwater plumes described in the 200-UP and 200-ZP GWIAs, apportionment of plumes and ratings to the U Plant Cribs and Ditches EU would be as follows (DOE/RL-2016-09, Rev. 0):

- *Chromium* – There are current plumes in the 200-UP/200-ZP GWIAs; however, the plumes are not considered associated with the U Plant Cribs and Ditches EU and thus no portion of these chromium plumes are associated with the CP-LS-3 EU.
- *Carbon tetrachloride (CCl_4) and trichlorothene (TCE)* – The CCl_4 and TCE plumes “straddle” the 200-UP and 200-ZP GWIAs; these plumes are “managed” in the 200-ZP GWIA (Appendix G.6). Furthermore, there are no inventories for CCl_4 or TCE reported for the CP-LS-3 EUs and thus no portions of the corresponding plumes are associated with the CP-LS-3 EU.
- *I-129* – There are plumes in the vicinity of the CP-LS-3 EU waste sites although the vadose inventory is small (Table G.5.3-2). The plumes in 200-UP originated from U Plant (216-U-1&2 Cribs near U Plant) and REDOX Plant waste sites where the latter were the primary sources. The SX Tank Farm may also be a source for a small plume in the area. Because the 216-U-1&2 waste sites are part of CP-LS-3, the portion of the 200-UP plume area is less than 1% (Appendix D.1). The 200-ZP sources for plumes include past leaks from single-shell tanks (SSTs) containing metal and liquid waste, and chemical processing at T Plant. Because no SST leaks are included in the CP-LS-3 EU sites, no portion of the 200-ZP plume area is associated with the CP-LS-3 EU.
- *Tc-99* – There are plumes in the vicinity of the CP-LS-3 EU waste sites and reported vadose zone inventories (Table G.5.3-3). Within 200-UP, the plume near the SX Tank Farm is attributed primarily to a large leak from tank SX-115 in 1965. Between 1966 and 1970, a large volume of

waste was released from tank S-104 in an overfill event resulting in Tc-99 reaching the groundwater. The plume near U Plant originated from the 216-U-1&2 Cribs, which were active in the 1950s and 1960s. The groundwater contamination at WMA U is believed to result from multiple sources (primarily tank leaks and overflows) in this WMA. For 200-ZP, sources include releases from SST and pipeline leaks in WMA T and WMA TX-TY and liquid waste disposal from plutonium-processing operations to cribs and trenches adjacent to the WMAs. Because the 216-U-1&2 Cribs are part of CP-LS-3, the portion of the 200-UP plume area assigned is 30% (Appendix D.1). No other sources were associated with CP-LS-3 waste sites so no other portions of plumes are apportioned to CP-LS-3, including none of the 200-ZP plume.

- *Uranium* – There is a plume in the 200-UP GWIA to the east of the 241-U tank farm (and reported vadose zone inventories) but no plume in the 200-ZP GWIA. The 216-U-1&2 Cribs were a source for the 200-UP plume. It was interpreted that uranium was also leaching from the vadose zone beneath U Pond; however, the U Pond is not part of CP-LS-3. Because the 216-U-1&2 Cribs are part of the CP-LS-3 EU, the portion of the 200-UP plume area assigned is 98% (Appendix D.1).
- *Group C&D Contaminants* – There are plumes and reported inventories for nitrates and tritium; however, these are not the focus of this discussion.

Thus no portions of the 200-ZP GWIA plumes are associated with the CP-LS-3 EU waste sites. Treatment actions in the 200-UP GWIA would impact the CP-LS-3 EU contaminants.

The groundwater plumes (i.e., I-129, Tc-99, and uranium) associated with the Group A and B PCs from the U Plant Cribs and Ditches EU are described in detail in the Appendix G.6 for the CP-GW-2 EU (200-UP and 200-ZP GWIAs). Note that nitrate, chromium (hexavalent), tritium (H-3), and I-129 are risk drivers (*Medium* ratings) for the 200-UP GWIA and carbon tetrachloride (*Very High*) is the primary risk driver for the 200-ZP GWIA; however, there are no *major* U Plant Cribs and Ditches EU sources associated with these plumes (i.e., less than 1% of the total plume area for one I-129 plume), and the remaining vadose zone sources from other EUs would drive future risks to groundwater.

<u>Impact of Recharge Rate and Radioactive Decay on Groundwater Ratings</u>

As described in Appendix E.5 for the CP-TF-4 (U Tank and Waste Farms) EU, the TC&WM EIS screening groundwater transport analysis (Appendix O, DOE/EIS-0391 2012) indicates that there is a significant impact of emplacing the engineered surface barrier (and resulting reduction of infiltrating water) on the predicted peak groundwater concentrations at the U Barrier[20]. To summarize, the Group A and B PC results for Central Plateau sources including those in addition to the U Plant Cribs and Ditches EU include (Appendix O, DOE/EIS-0391 2012):

- Tc-99 peak concentration is 9830 pCi/L (CY 3985) for the No Action Alternative versus 259 pCi/L (CY 3296) for the Landfill Scenarios where the threshold value is 900 pCi/L.
- Nitrate and uranium peak concentrations were all lower than the standard for both the No Action and Landfill Scenarios.

[20] The barrier represents the edge of the infiltration barrier to be constructed over disposal areas that are within 100 meters [110 yards] of facility fence lines (DOE/EIS-0391 2012). The U Barrier is the closest to the U Plant Cribs and Ditches EU. Despite including sources other than those for the U Plant Cribs and Ditches EU, the analysis in the TC&WM EIS was considered a reasonable source of information to assess the impact of the engineered surface barrier emplacement.

- No values are reported at the U Barrier for Sr-90 and various other contaminants for either scenario, which indicates that the appropriate sources were not considered in the analysis, or peak fluxes that were less than 1×10^{-8} Ci/yr for radioactive contaminants, or 1×10^{-8} g/yr for chemical contaminants (Appendix O, DOE/EIS-0391 2012, p. O-2).

The predicted peak concentrations at the U Barrier for the Landfill Scenarios remain below threshold values during the TC&WM EIS evaluation period (10,000 years) and thus the ratings for the Near-term Post-Cleanup period could be *Not Discernible* (*ND*) but is assigned to *Low* for this period (to account for uncertainties in the evaluation)[21]. Note that the U Plant P&T System is assumed effective in treating the larger existing total uranium plume related to the 216-U-1&2 Cribs (CP-LS-3) and thus the contribution from the remaining vadose zone source would be controlled based on the TC&WM EIS screening groundwater transport analysis described above.

Columbia River

Threats to the Columbia River similar to those presented by the U Plant Cribs and Ditches EU were evaluated in Section 5.5 of Appendix E.6 for CP-TF-4 (U Single-shell Tank and Waste Farm in 200 West) where all risks and potential impacts were rated *Not Discernible* (*ND*).

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[21] Analyses specific to each Tank Farm or Central Plateau EU are not available; thus the aggregate screening analysis provided in the TC&WM EIS was used as an indication. These results do not indicate that the sources for the high concentrations of future contaminants in question are primarily from the U Plant Cribs and Ditches EU.

Table G.5.3-2. Inventory of Primary Contaminants [(a)]

WIDS	Description	Decay Date	Ref[b, c]	Am-241 (Ci)	C-14 (Ci)	Cl-36 (Ci)	Co-60 (Ci)	Cs-137 (Ci)	Eu-152 (Ci)	Eu-154 (Ci)	H-3 (Ci)	I-129 (Ci)
All	Sum[(d)]			0.047	0.011	NR	0.2	1600	0.00063	0.034	12000	0.013
241-U-361	MUST	1976	EIS-S	NR	NR	NR	NR	1400	NR	NR	NR	NR
200-W PP	Ponds	2001	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR
216-S-23	Cribs	2001	SIM	3.40E-06	7.10E-07	NR	3.40E-06	0.059	1.90E-07	1.30E-05	4.20E-05	2.90E-08
216-U-1&2	Cribs	2001	SIM	0.023	0.00011	NR	8.80E-05	1.8	6.90E-06	0.00052	110	2.30E-06
216-U-12	Cribs	2001	SIM	1.40E-08	7.60E-07	NR	5.60E-05	70	0.00042	0.017	3200	1.40E-06
216-U-16	Cribs	2001	SIM	3.00E-05	0.00093	NR	NR	8.50E-05	NR	NR	4200	7.50E-08
216-U-17	Cribs	2001	SIM	NR	NR	NR	NR	NR	NR	NR	190	NR
216-U-8	Cribs	2001	SIM	4.70E-05	6.80E-06	NR	1.40E-05	0.051	8.30E-07	5.90E-05	4600	0.0049
207-U	Basins		EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR
216-U-14	Ditches	2001	SIM	0.0023	0.0078	NR	0.2	2.9	8.60E-06	0.0024	9.5	0.0082
216-U-4	Wells	2001	SIM	5.40E-05	7.00E-06	NR	8.00E-06	0.32	5.80E-07	4.50E-05	0.00036	1.50E-07
216-T-20	Trenches	2001	SIM	5.30E-05	9.20E-06	NR	1.00E-05	0.32	5.70E-07	4.30E-05	0.3	1.50E-07
216-U-15	Trenches	2001	SIM	0.00012	1.50E-06	NR	1.50E-06	0.054	1.10E-07	8.20E-06	6.40E-05	3.20E-08
UPR-200-W-131	UPR	2001	SIM	2.50E-05	3.60E-06	NR	2.80E-06	0.17	2.20E-07	1.70E-05	9.30E-05	7.20E-08
UPR-200-W-135	UPR	2001	SIM	0.018	0.0016	NR	0.0018	100	0.00016	0.012	0.098	5.00E-05
UPR-200-W-163	UPR	2001	SIM	2.10E-09	3.10E-10	NR	6.40E-10	3.00E-06	3.90E-11	2.80E-09	0.93	2.50E-07
UPR-200-W-19	UPR	2001	SIM	1.70E-07	8.10E-10	NR	6.30E-10	1.30E-05	5.00E-11	3.80E-09	2.10E-08	1.60E-11
UPR-200-W-28	UPR	2001	SIM	0.0038	0.00055	NR	0.00043	26	3.40E-05	0.0026	0.014	1.10E-05
UPR-200-W-33	UPR	2001	SIM	1.10E-05	1.00E-06	NR	1.10E-06	0.061	9.70E-08	7.10E-06	6.00E-05	3.00E-08
UPR-200-W-39	UPR	2001	SIM	NR	NR	NR	NR	NR	NR	NR	0.0061	NR

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.

Table G.5.3-3. Inventory of Primary Contaminants (cont)[a]

WIDS	Description	Decay Date	Ref[b, c]	Ni-59 (Ci)	Ni-63 (Ci)	Pu (total) (Ci)	Sr-90 (Ci)	Tc-99 (Ci)	U (total) (Ci)
All	Sum[d]			0.00075	0.066	0.81	810	11	25
241-U-361	MUST	1976	EIS-S	NR	NR	NR	760	NR	NR
200-W PP	Ponds	2001	EIS-S	NR	NR	NR	NR	NR	NR
216-S-23	Cribs	2001	SIM	5.40E-07	5.20E-05	5.80E-06	0.0011	1.90E-05	1.10E-08
216-U-1&2	Cribs	2001	SIM	2.90E-05	0.0026	0.057	1.2	7.3	2.7
216-U-12	Cribs	2001	SIM	1.80E-05	0.0016	0.019	30	0.68	4.5
216-U-16	Cribs	2001	SIM	NR	NR	0.00085	6.70E-08	NR	0.00011
216-U-17	Cribs	2001	SIM	NR	NR	0.0015	NR	NR	0.00022
216-U-8	Cribs	2001	SIM	2.70E-06	0.00026	0.015	0.033	2.7	17
207-U	Basins		EIS-S	NR	NR	NR	NR	NR	NR
216-U-14	Ditches	2001	SIM	3.10E-05	0.0029	0.68	0.075	0.00082	0.058
216-U-4	Wells	2001	SIM	2.10E-06	0.0002	0.00022	0.04	0.00015	1.00E-05
216-T-20	Trenches	2001	SIM	1.40E-06	0.00015	0.00024	0.076	0.00011	7.30E-07
216-U-15	Trenches	2001	SIM	4.30E-07	3.90E-05	0.00031	0.011	0.035	0.0067
UPR-200-W-131	UPR	2001	SIM	9.40E-07	8.20E-05	5.90E-05	0.038	5.60E-05	3.20E-07
UPR-200-W-135	UPR	2001	SIM	0.00052	0.046	0.028	9.4	0.044	0.0024
UPR-200-W-163	UPR	2001	SIM	1.30E-10	1.20E-08	2.30E-07	1.40E-06	0.0023	0.015
UPR-200-W-19	UPR	2001	SIM	2.10E-10	1.90E-08	4.10E-07	8.50E-06	5.10E-05	9.80E-06
UPR-200-W-28	UPR	2001	SIM	0.00014	0.013	0.0091	5.7	0.0086	4.90E-05
UPR-200-W-33	UPR	2001	SIM	3.20E-07	2.80E-05	1.70E-05	0.0057	2.70E-05	1.50E-06
UPR-200-W-39	UPR	2001	SIM	NR	NR	NR	NR	1.10E-05	0.00023

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.

Table G.5.3-4. Inventory of Primary Contaminants (cont)[(a)]

WIDS	Description	Ref[(b, c)]	CCl4 (kg)	CN (kg)	Cr (kg)	Cr-VI (kg)	Hg (kg)	NO3 (kg)	Pb (kg)	TBP (kg)	TCE (kg)	U (total) (kg)
All	Sum		NR	NR	420	NR	2.7	7.20E+06	21	12000	NR	110000
241-U-361	MUST	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	69000
200-W PP	Ponds	EIS-S	NR	NR	0.034	NR	0.00034	1700	0.1	NR	NR	NR
216-S-23	Cribs	SIM	NR	NR	0.0013	NR	0.033	1900	9.70E-06	NR	NR	1.60E-05
216-U-1&2	Cribs	SIM	NR	NR	210	NR	0.032	170000	NR	1100	NR	4000
216-U-12	Cribs	SIM	NR	NR	19	NR	0.44	2.30E+06	1.80E-07	NR	NR	6500
216-U-16	Cribs	SIM	NR	NR	NR	NR	0.16	7600	1.5	10000	NR	0.13
216-U-17	Cribs	SIM	NR	NR	0.65	NR	0.017	91000	NR	NR	NR	0.25
216-U-8	Cribs	SIM	NR	NR	32	NR	0.88	4.60E+06	NR	NR	NR	26000
207-U	Basins	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	45
216-U-14	Ditches	SIM	NR	NR	8.8	NR	1.1	110000	19	NR	NR	83
216-U-4	Wells	SIM	NR	NR	120	NR	NR	2900	NR	NR	NR	0.015
216-T-20	Trenches	SIM	NR	NR	0.016	NR	1.10E-05	20	NR	NR	NR	0.0011
216-U-15	Trenches	SIM	NR	NR	18	NR	NR	440	NR	5.6	NR	9.9
UPR-200-W-131	UPR	SIM	NR	NR	0.0025	NR	4.80E-06	2.8	NR	NR	NR	0.00047
UPR-200-W-135	UPR	SIM	NR	NR	0.7	NR	0.0012	43	NR	NR	NR	3.6
UPR-200-W-163	UPR	SIM	NR	NR	0.0032	NR	0.00011	450	NR	NR	NR	22
UPR-200-W-19	UPR	SIM	NR	NR	0.00071	NR	NR	0.045	NR	0.0081	NR	0.015
UPR-200-W-28	UPR	SIM	NR	NR	0.38	NR	0.00073	420	NR	NR	NR	0.072
UPR-200-W-33	UPR	SIM	NR	NR	0.00043	NR	7.50E-07	0.026	NR	NR	NR	0.0022
UPR-200-W-39	UPR	SIM	NR	NR	4.20E-05	NR	1.40E-06	5.9	NR	NR	NR	0.33

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)

Table G.5.3-5. Summary of the Evaluation of Current Threats to Groundwater as a Protected Resource from Saturated Zone (SZ) and Remaining Vadose Zone (VZ) Contamination associated with the Evaluation Unit

PC	Group	WQS	Porosity[a]	K_d (mL/g)[a]	ρ (kg/L)[a]	VZ Source M^{Source}	SZ Total M^{SZ}	Treated[c] M^{Treat}	VZ Remaining M^{Tot}	VZ GTM (Mm^3)	VZ Rating[d]
C-14	A	2000 pCi/L	0.23	0	1.84	1.10E-02 Ci	---	---	1.10E-02 Ci	5.51E-03	*Low*
I-129	A	1 pCi/L	0.23	0.2	1.84	1.32E-02 Ci	5.41E-04 Ci	---	1.27E-02 Ci	4.88E+00	*Low*
Sr-90	B	8 pCi/L	0.23	22	1.84	4.65E+01 Ci	---	---	4.65E+01 Ci	3.29E+01	*ND*[(e)]
Tc-99	A	900 pCi/L	0.23	0	1.84	1.07E+01 Ci	2.17E+00 Ci	1.37E+00 Ci	7.20E+00 Ci	8.00E+00	*Low*
CCl_4	A	5 µg/L	0.23	0	1.84	---	---	---	---	---	*ND*
Cr	B	100 µg/L	0.23	0	1.84	4.19E+02 kg	---	---	4.19E+02 kg	4.19E+00	*Low*
Cr-VI	A	48 µg/L[b]	0.23	0	1.84	4.19E+02 kg	---	---	4.19E+02 kg	8.73E+00	*Low*
TCE	B	5 µg/L	0.23	2	1.84	---	---	---	---	---	*ND*
U(tot)	B	30 µg/L	0.23	0.8	1.84	3.61E+04 kg	2.30E+02 kg	8.87E+02 kg	3.50E+04 kg	1.58E+02	*High*

a. Parameters obtained from the analysis provided in Attachment 6-1 to Methodology Report (CRESP 2015a).

b. "Model Toxics Control Act—Cleanup" (WAC 173-340) Method B groundwater cleanup level for hexavalent chromium.

c. Treatment amounts from the 2015 Hanford Annual Groundwater Report (DOE/RL-2016-09, Rev. 0).

d. Groundwater Threat Metric rating based on Table 6-3, Methodology Report (CRESP 2015a).

e. As discussed in **Part V**, no appreciable Sr-90 plume would be expected in the next 150 years due to transport and decay considerations. Thus the *Low* rating would apply to the period at the end of the Active Cleanup is complete to account for uncertainties.

PART VI. POTENTIAL RISK/IMPACT PATHWAYS AND EVENTS

CURRENT CONCEPTUAL MODEL

Pathways and Barriers

Briefly describe the current institutional, engineered and natural barriers that prevent release or dispersion of contamination, risk to human health and impacts to resources:

1. What nuclear and non-nuclear safety accident scenarios dominate risk at the facility? What are the response times associated with each postulated scenario?

The waste sites were covered in clean soil, and soil cover is maintained as needed to prevent release to the air or intrusion by biological receptors or humans. The primary accident scenarios are direct human and ecological contact as well as continued groundwater impact (DOE/RL-2003-24, Rev. 0).

2. What are the active safety class and safety significant systems and controls?

Remedial actions include monitoring and treatment of groundwater is being conducted (using the WMA S-SX groundwater extraction system, U Plant area P&T system, and I-129 plume hydraulic control system in 200-UP and 200-West Pump and Treat Facility in 200-ZP). There are no active safety class or safety significant systems and controls.

3. What are the passive safety class and safety significant systems and controls?

A clean soil cover has been placed over the waste sites to prevent human and biological intrusion; however, there are no passive safety class or safety significant systems and controls.

4. What are the current barriers to release or dispersion of contamination from the primary facility? What is the integrity of each of these barriers? Are there completed pathways to receptors or are such pathways likely to be completed during the evaluation period?

The primary barriers to release and transport from the waste sites, include sorption to vadose zone and saturated zone media and temporary soil and gravel cover. The soil and gravel covers are still in place although waste sites within the CP-LS-3 EU are still contaminating the surrounding vadose zone media and may be leading to additional saturated zone contamination. The saturated zone in the 200-UP area is being treated using the WMA S-SX groundwater extraction system, U Plant area P&T system (uranium plume), and I-129 plume hydraulic control system and in the 200-ZP GWIA using the 200-West Pump and Treat Facility (DOE/RL-2016-09, Rev. 0); these treatment systems act as additional barriers[22]. There are currently no complete pathways to human or ecological receptors; however, there is a complete path to the saturated zone, which is a protected resource, via the vadose zone.

5. What forms of initiating events may lead to degradation or failure of each of the barriers?

Those events (e.g., significant water line break or increased infiltration including temporary cover degradation) that could provide sufficient water to the CP-LS-3 waste sites to cause additional release and migration of the relatively more mobile species (e.g., Cr, Tc-99, and I-129) in the Hanford subsurface environment.

[22] As described in **Part V**, current groundwater plumes in the 200-UP GWIA appear to have sources in the CP-LS-3 wastes sites so the primary treatment barriers are those in the 200-UP GWIA.

6. What are the primary pathways and populations or resources at risk from this source?

The primary pathway from the CP-LS-3 EU waste sites is release to the vadose zone (primarily from contact with infiltrating water) that then migrates to the saturated zone (groundwater), which is considered a protected resource (and thus receptor) and ultimately the Columbia River (which is also considered a protected resource and thus a receptor for the purpose of this study). Either contaminated groundwater or surface water (Columbia River) may be used by human or ecological receptors.

There are complete pathways for the exposure of ecological receptors to vadose zone contaminants in the legacy source areas. There will also be other possible pathways (ingestion, external radiation and dermal, inhalation) from residual wastes to human and ecological receptors after institutional controls are lifted.

7. What is the time frame from each of the initiating events to human exposure or impacts to resources?

As described in the CP-GW-2 (Appendix D.6), the relatively long residence times in Hanford groundwater are consistent with recharge conditions for a semi-arid site; however, there is variation in expected residence times (PNNL-6415 Rev. 18, p. 4-72). Groundwater travel time from 200-West to 200-East (50+ years) and then from 200 East to the Columbia River is (~10-30 years) limits impacts to the Columbia River to very mobile contaminants over very long time frames. Travel times from the 200 Areas to the Columbia River are expected to decrease because of the reduced hydraulic gradient from the discontinued wastewater recharge in the 200 Areas.

8. Are there current on-going releases to the environment or receptors?

Waste sites in the CP-LS-3 EU pose a current risk (where constituents have already migrated to the saturated zone) and continuing risk to protected natural resources in the area including groundwater and perhaps the Columbia River in the very long-term, which is outside the scope of this evaluation. However, since there is prohibition on the use of groundwater through the Active and Near-term, Post-Cleanup periods, there is no risk to humans. Contaminated groundwater is being treated in the 200-UP GWIA using the WMA S-SX groundwater extraction system, U Plant area P&T system (uranium plume), and I-129 plume hydraulic control system and in the 200-ZP GWIA using the 200-West Pump and Treat Facility (DOE/RL-2016-09, Rev. 0); these treatment systems will reduce risks to both the groundwater and the Columbia River. Furthermore, the risks to benthic, riparian zone, and free-flowing ecology are minimal as described in **Part V** of Appendix D.6 (CP-GW-2 EU).

Populations and Resources Currently at Risk or Potentially Impacted

As mentioned in **Part I**, there is no Documented Safety Analysis or hazard analysis for the CP-LS-3 waste sites because they do not currently satisfy the requirements for performing these types of analyses. Thus evaluations of risk for this type of site (i.e., a legacy site) are often more qualitative in nature than those with a formal safety analysis.

The Department of Energy and contractor site-specific safety and health planning that includes work control, fire protection, training, occupational safety and industrial hygiene, emergency preparedness and response, and management and organization—which are fully integrated with nuclear safety and radiological protection—have proven to be effective in reducing industrial accidents at the Hanford Site to well below that in private industry. Further, the safety and health program must effectively ensure that ongoing task-specific hazard analyses are conducted so that the selection of appropriate PPE can be made and modified as conditions warrant. Task-specific hazard analyses must lead to the development of written work planning documents and standard operating procedures (SOPs) [DOE uses the term work planning documents in addition to procedures] that specify the controls necessary to safely perform each task, to include continuous employee exposure monitoring. Last, ICs will be used to control access to residual contaminants in soil and groundwater as long as they exceed the cleanup levels (CULs). As such, mitigation actions will generally lead to reduced risks.

Facility Worker

Facility workers are at risk when working in or around areas with contaminated soils, including working on active remedial activities involving these legacy sources, which are currently not being conducted. Exposure to such contaminants is currently limited because waste sites and contaminated soils are located below grade. However, during maintenance and monitoring operations near the CP-LS-3 waste sites (e.g., drilling and sampling), there may be the potential for limited exposure to hazardous and radioactive contaminants; however, risks would be minimal and short-term resulting from monitoring and maintenance activities conducted by experienced workers and appropriate safety precautions (DOE/RL-2003-23, Rev. 0, p. 5-14). Thus current risks to workers are considered not an issue due to protective soil covers over most waste sites and the safety measures taken for work activities in the area (DOE/RL-2003-23, Rev. 0, p. 5-11).

Facility Worker: Risks are thus rated as *Not Discernible (ND*) to *Low* because of the soil cover over most sites, with mitigated risk of *ND* to *Low* due to both soil cover and employed safety measures (as described above).

Co-Located Person (CP)

Co-located persons would be expected to have similar reduced exposures as for facility workers.

Co-Located Person: Risks are thus rated as *ND* to *Low*, with mitigated risk of *ND* for reasons described above.

Public

The public would be expected to have significantly reduced exposure, even lower than that for facility workers and co-located persons, due to the remote distance to the site, depth from ground surface to soil contamination, and depth to groundwater contamination (and lack of use).

Public: Risks are rated as *ND*; mitigated risk is rated as *ND*.

Groundwater

Table G.5.3-5 represents the risks and associated ratings for the saturated zone (groundwater) from remaining vadose zone contamination associated with the CP-LS-3 waste sites. Sites within the CP-LS-3 EU have likely contaminated both the shallow and deep vadose zone (DOE/RL-2003-23, Rev. 0, Appendix C[23]) and are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). The current risk and potential impact ratings for the CP-LS-3 EU are *High* (total uranium), *ND* (Sr-90), and *Low* (other Group A and B PCs) (Table G.5.3-5). Monitoring and treatment of groundwater is being conducted within the 200-UP GWIA (using the WMA S-SX groundwater extraction system, the U Plant area P&T system, and the I-129 plume hydraulic control system) and 200-ZP GWIA

[23] The baseline human health and ecological risk assessment for the 200-UW-1 OU is provided as Appendix C of the 200-UW-1 Focused Feasibility Study (FFS) (DOE/RL-2003-23, Rev. 0).

(using the 200 West P&T facility), which is described as part of the CP-GW-2 EU (Appendix D.6). Only plumes within the 200-UP GWIA have been linked to CP-LS-3 EU waste sites.

Columbia River

As described in Appendix D.6 (CP-GW-2 EU) and **Part V**, no plumes from the 200 West Area (that includes the CP-LS-3 waste sites) currently intersect the Columbia River, thus current ratings for all contaminants for the benthic, riparian, and free-flowing ecology are *ND*.

Ecological Resources

Summary of Ecological Review:

- 46% of the EU consists of level 0 and 1 habitat; level 2 habitat is fragmented by roads, waste sites and pipelines which are kept free of vegetation.
- The largest area of resource level 3 habitat (~13 acres) is in the southwest corner of the EU, and is bounded by level 0 resource habitats on all sides.
- Level 2 habitats within the U Plant Cribs and Ditches EU are fragmented as is much of the landscape within the 200-West Area. Loss of remaining level 2 or level 3 habitat associated with remediation actions in this EU would not be expected to significantly alter habitat connectivity outside the 200-West Area.
- Individual occurrences of Piper's daisy, a state sensitive species, have been previously documented in the EU, although none were observed during the 2015 survey. Loss of individual plants of this species is not likely to affect population viability for the Washington State sensitive species.

Cultural Resources

The CP-LS-3, U Plant Cribs and Ditches EU is located within the 200-West Area of the Hanford Site, an area known to have low potential to contain Native American Precontact and Ethnographic archaeological resources and Pre-Hanford Early Settlers/Farming resources. Much of the 200 Areas were addressed in a cultural resources report entitled *Archaeological Survey of the 200 East and 200 West Areas, Hanford Site* (Chatters and Cadoret 1990). The focus of this archaeological survey was on inventorying all undisturbed portions of the 200-East and 200-West Areas. This report concluded that much of the 200-East and 200-West Areas can be considered areas of low archaeological potential with the exception of intact portions of an historic/ethnohistoric trail/road corridor which runs through the 200-West Area.

Small portions of the EU have been surveyed for cultural resources under four reviews: HCRC#87-200-032 (Cadoret 1988), HCRC#93-600-004 (McIntire and Myers 1993), HCRC#94-200-097 (Crist 1994), and HCRC#2011-200-032 (Mendez 2011). None of these reviews resulted in the identification of cultural resources within the EU. It is unknown if an NHPA Section 106 review has been completed specifically for remediation of CP-LS-3, U Plant Cribs and Ditches EU. It is unlikely that intact previously undocumented archaeological material is present in the EU, both on the surface and in subsurface areas, because the soils in the CP-LS-3, U Plant Cribs and Ditches EU appear to have been extensively disturbed by Hanford Site activities.

Archaeological sites, buildings and Traditional Cultural Properties (TCPs) located within the EU[24]

- Segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required, are located within the CP-LS-3 U Plant Cribs and Ditches EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for this property.
- There are 10 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District are located within CP-LS-3, U Plant Cribs and Ditches EU (all 10 are contributing properties within the Manhattan Project and Cold War Era Historic District, 1 with individual documentation required, and 9 with no additional documentation required). In accordance with the 1998 *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for this property.

Table K.2 (Appendix K) has more information about the 10 buildings that are National Register-eligible Manhattan Project and Cold War Era Buildings located within CP-LS-3, U Plant Cribs and Ditches EU.

Archaeological Sites, buildings, and TCPs located within 500 meters of the EU

- A non-contributing segment of a National Register Eligible historic/ethnohistoric trail/road corridor is located within 500 meters of the EU.
- There are 28 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District are located within 500 meters of the CP-LS-3 U Plant Cribs and Ditches EU (all 28 are contributing properties to the Manhattan Project and Cold War Era Historic District, 18 with individual documentation required, and 10 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for these properties.

Table K.3 (Appendix K) has more information about the 28 buildings that are National Register-eligible Manhattan Project and Cold War Era buildings located within 500 meters of the CP-LS-3 U Plant Cribs and Ditches EU.

Closest Recorded TCP

There are two recorded TCPs associated with the Native American Precontact and Ethnographic Landscape that are visible from the CP-LS-3, U Plant Cribs and Ditches EU.

Cleanup Approaches and End-State Conceptual Model

Selected or Potential Cleanup Approaches

Action memoranda (DOE/RL-2009-37, Rev. 0; DOE/RL-2009-86, Rev. 0) are in place to remove contaminated soil, structures, and debris from 200 West Inner Area soil sites with disposal at ERDF. Future cleanup decisions for remaining waste sites will be included in decision documents (e.g.,

[24] Traditional cultural property has been defined by the National Park Service as "a property, a place, that is eligible for inclusion on the National Register of Historic Places because of its association with cultural practices and beliefs that are (1) rooted in the history of a community, and (2) are important to maintaining the continuity of that community's traditional beliefs and practices" (Parker & King 1998).

additional action memoranda and Records of Decision). A set of five *plausible* remedial alternatives is provided in the Evaluation Unit Disposition Table (Appendix B) for CP-LS-3 EU. However, a Focused Feasibility Study (FFS) was prepared for the 200-UW-1 Operable Unit (DOE/RL-2003-23, Rev. 0). As indicated in **Part I**, the 200-UW-1 OU includes many of the CP-LS-3 EU waste sites and thus the detailed analysis provided of the remedial alternatives considered is assumed relevant. Thus these alternatives are used instead of those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU. Note the remedial alternatives from the 200-UW-1 FFS capture those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU. The four remedial action alternatives developed in the 200-UW-1 FFS are:[25]

- No Action (Alternative 1)
- Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation (Alternative 2)
- Removal, Treatment, and Disposal (Alternative 3)
- Engineered Barrier (Alternative 4)

The alternatives were considered as standalone alternatives; however, impacts from remedial activities at adjacent sites should also be considered during implementation. These alternatives provide a range of remedial responses deemed appropriate to address site-specific conditions. The alternatives were evaluated and compared to the nine CERCLA criteria (DOE/RL-2003-23, Rev. 0)[26].

The following descriptions of the four alternatives are abridged versions of those provided in the 200-UW-1 FFS (DOE/RL-2003-23, Rev. 0).

Alternative 1: No Action. 40 CFR 300 requires that a No Action alternative be evaluated as a baseline for comparison with other alternatives and represents a situation where no legal restrictions, access controls, or active remedial measures are applied. This alternative allows wastes to remain in place where they will be affected only by natural processes. Selection of this alternative would require that the wastes pose no unacceptable threat to human health or the environment. However, based on the 200-UW-1 OU evaluations, none of the representative sites considered satisfied the industrial land-use remedial action objectives (under the No Action alterative).

Alternative 2: Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation. Under this alternative, existing soil covers would be maintained and/or increased to provide protection from intrusion by biological receptors, and legal and physical barriers that would mitigate contaminant exposure would be maintained. Radioactive contaminants would be allowed to decay in place (i.e., attenuate naturally) to reduce risk until remedial goals are satisfied. Monitored natural attenuation includes sampling and/or monitoring consistent with EPA guidance, to verify expected attenuation and to ensure that contaminants remain isolated.

Alternative 3: Removal, Treatment, and Disposal. Structures and soil with contaminant concentrations above preliminary remediation goals (PRGs) would be removed and disposed of in an approved disposal

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[25] Non-time-critical actions have also been defined for selected 200-MG-2 OU waste sites that are also within the CP-LS-3 EU (DOE/RL-2009-37, Rev. 0).

[26] The 200-UW-1 FFS also supports closure of the 216-U-12 Crib, a TSD unit under RCRA, which will require modification of WA7890008967, *Hanford Facility RCRA Permit*, to incorporate the 216-U-12 Crib (DOE/RL-2003-23, Rev. 0).

facility, most likely in ERDF. The depth and volume of soil to be removed depends on which PRGs are exceeded. For these waste sites, contamination is at significant depth and requires actions similar to mining operations to achieve greater depths. Requirements for safety, monitoring, and sampling are well understood at the Hanford Site where numerous such actions have been implemented in radiological and hazardous environments. Radioactive waste requires special protocols based on process knowledge and results from characterization activities. After the cover and contaminated soil are removed (meeting remedial objectives), uncontaminated soil would be used to backfill the excavation and the site will be recontoured, resurfaced, and/or revegetated to establish natural site conditions.

Alternative 4: Engineered Barrier. These barriers consist of surface barriers emplaced over contaminated waste sites to control the amount of water infiltrating into contaminated media and thereby reducing release of contamination to the vadose zone and migration to groundwater. These barriers may also act as physical barriers to prevent intrusion by human and ecological receptors, limit erosion, and shield radiation. Institutional controls (including legal, administrative, or physical controls) would be required to prevent activities that might alter barrier effectiveness and minimize the potential for exposure to contamination. Performance monitoring is needed to ensure that the barrier is performing as designed as well as monitoring groundwater to ensure that remedial objectives are satisfied. The preferred engineered barrier technology for the 200-UW-1 OU is an evapotranspiration (ET) barrier, which has been shown to be equivalent to, or to exceed the performance of, the standard RCRA Subtitle C Barrier design while also being more cost effective in arid climates, such as that at the Hanford Site.

Contaminant Inventory Remaining at the Conclusion of Planned Active Cleanup Period

The remedial actions that have either been identified (i.e., those non-time-critical actions for the CP-LS-3 waste sites also in the 200-MG-2 OU (DOE/RL-2009-37, Rev. 0)) or are being evaluated (e.g., those in the 200-UW-1 FFS (DOE/RL-2003-23, Rev. 0)) would leave existing contamination in CP-LS-3 waste sites as well as that contamination that has been released from CP-LS-3 waste sites into some shallow and deep vadose zones. Waste sites within the CP-LS-3 EU have likely contributed mobile contaminants to groundwater contamination in the 200-UP and 200-ZP GWIAs, which are being treated in 200-UP using the WMA S-SX groundwater extraction system, the U Plant area P&T system, and I-129 plume hydraulic control system and in 200-ZP using the 200-West Pump and Treat Facility (DOE/RL-2016-09, Rev. 0). However, remedial actions will be taken until resulting residual contamination levels satisfy remedial objectives and monitoring of both vadose and saturated zone contamination will continue to assess remedial action performance. Residual concentrations cannot be determined at this time.

Risks and Potential Impacts Associated with Cleanup

There is a range of risks and potential impacts associated with the cleanup activities being evaluated in the 200-UW-1 FFS (DOE/RL-2003-23, Rev. 0) that were selected to represent plausible remedial actions for the CP-LS-3 waste sites; these risks are bounded by the *No Action* and *RTD* alternatives. For example, there would be no *additional* worker and public risks associated with the *No Action* alternative because no remedial activities would be conducted. These risks are the same as those expected for the *Maintain Existing Soil Cover, ICs, and MNA* alternative that involve only minimal, short-term risks from monitoring and maintenance activities conducted by experienced workers and appropriate safety precautions (DOE/RL-2003-23, Rev. 0, p. 5-14). These monitoring and maintenance actions are also assumed to be currently conducted (as described above for *Current* conditions). For the *RTD* alternative, a significantly large excavation would be required that would also expose remedial workers (especially during excavation, transportation, and disposal activities) to contamination and require the need to address industrial hazards, including heavy equipment and heat stroke (DOE/RL-2003-23, Rev. 0, p. 5-19 – 5-20).

The 200-UW-1 FFS results will be used to evaluate *possible* radiological impacts to workers during selected remedial alternatives. However, because the FFS evaluation is not done according to the same standard as for a DSA (DOE-STD-3009-2014), these results should not be considered of the same quality of those for a DSA and should not be represented as such (i.e., FFS dose estimates should only be tabulated with appropriate caveats and should not be plotted on the same graphs as DSA results to avoid confusion).

POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED DURING OR AS A CONSEQUENCE OF CLEANUP ACTIONS

Facility Worker

In term of potential impacts to workers, the cleanup alternatives that are being evaluated for the 200-UW-1 OU range from *No Action* (monitoring and natural attenuation) to installation of an engineered barrier to significant actions, including removal, treatment, and disposal (RTD) (DOE/RL-2003-23, Rev. 0). Thus impacts to facility workers (i.e., those performing cleanup actions) from potential cleanup activities would also vary significantly. For example, the estimated dose for a *maximally exposed* laborer (performing dust suppression) at the center of the 216-U-1/2 cribs would be approximately 800 person-rem for a single receptor (DOE/RL-2003-23, Rev. 0, p. G-13), which we will consider relates to a *High* rating because it significantly exceeds the 25-rem limit for a "worker" from Table 2-4 (although this limit is for a single, unmitigated event), the 100-rem limit for a co-located worker (DOE-STD-3009-2014), the 65-rem limit from NCRP (Table 2-3), and the 100-rem lifetime dose from ICRP (Table 2-3). Truck drivers (near the side of the 216-U-1/2 pits) might experience a dose on the order of 2 person-rem for a single receptor (DOE/RL-2003-23, Rev. 0, p. G-13), which corresponds to a *Low* rating (based again on comparisons to Table 2-3 and Table 2-4). Other estimated doses for active remedial actions are lower. *As described above, these dose estimates are not computed to the same standard as for a DSA and should be treated accordingly.* For the No Action alternative, the monitoring and maintenance actions are also assumed to be conducted (as described above for *Current* conditions) with an *ND-Low* risk rating. The unmitigated risk ratings for facility workers range from *Low* to *High* based on the action that would be taken (or not taken) (i.e., *ND-Low* for *No Action*, which is the same as for current conditions, to *Low-High* for RTD).

Unmitigated Consequences: Facility Worker – *ND-Low* (No Action) to *Low-High* (RTD)

Mitigation: Although calculated doses to all receptors are "high" for the 216-U-1/2 and 216-U-8 Cribs under the RTD scenario (DOE/RL-2003-23, Rev. 0, p. G-6), the analysis assumed a single receptor (i.e., laborer, excavator operator, and truck driver) for each task, when in reality, multiple personnel would be performing the tasks. For example, most ALARA exposure goals for DOE sites limit worker doses to 500 to 1,000 mrem/year (DOE/RL-2003-23, Rev. 0); therefore, multiple laborers would be required to share incurred doses. Additional radiological controls (e.g., a water cannon to prevent laborers from entering the active exhumation area or additional shielding) would also be implemented to maintain ALARA exposure goals, which would result in *Low* rating. Risk ratings for other scenarios would be *ND-Low*.

Mitigated Consequences: Facility Worker – *ND-Low* to *Low* (RTD)

Co-located Person

The only workers at increased risks (over those for *Current* conditions as described above) are the facility workers. Thus the ratings for co-located persons are the same as those for *Current* conditions.

Unmitigated Consequences: Co-located Person – *ND-Low*

Mitigation: No *additional* mitigation actions (to those described above for *Current* conditions) are required.

Mitigated Consequences: Co-located Person – *ND-Low*

Public

Only workers would be at risk due to distance and soil cover.

Unmitigated Consequences: Public – *ND*

Mitigation: No *additional* mitigation actions (to those described above for *Current* conditions) are required.

Mitigated Consequences: Public – *ND*

Groundwater

As described in **Part V**, there will be a continuing impact during this period to groundwater (as a protected resource) from mobile primary contaminants from the U Plant Cribs and Ditches currently with plumes that exceed thresholds. These impacts are described in more detail in Appendix G.6 for the CP-GW-2 EU.

Furthermore, there are contaminant sources (legacy source sites) in the vadose zone that pose continuing risk to groundwater (via the vadose zone). As described in **Part V**, the vadose zone (VZ) GTM values for the Group A and B primary contaminants for the U Plant Cribs and Ditches EU could translate to ratings of *Not Discernible* (*ND*) (because of the large potential impact of recharge rates) but are assigned ratings of *Low* (to address uncertainties). As indicated in **Part V**, Sr-90 is unlikely to impact the groundwater in sufficient quantities to exceed the drinking water standard and thus is not considered a significant future threat (and is also given a *Low* rating after the Active Cleanup period). These ratings correspond to an overall rating of *Low* for the Near-term, Post-Cleanup period to account for uncertainties. The current ratings are not changed for the Active Cleanup period.

The WMA S-SX groundwater extraction system, the U Plant area P&T system, and the I-129 plume hydraulic control system in the 200-UP GWIA and the 200 West Area P&T system in the 200-ZP GWIA are assumed to be operational during this evaluation period, which will be treating groundwater contamination in the 200 West area.

It is considered unlikely that additional groundwater resources would be impacted as a result of either interim remedial actions (e.g., pump and treat) or final closure activities (that are not covered in the Ecological or Cultural Resources results).

Columbia River

As described in **Part V**, impacts to the Columbia River benthic, riparian, and free-flowing ecology for the Active Cleanup and Near-term, Post Cleanup periods are rated as *Not Discernible* (*ND*). Additional information on groundwater plumes and potential threats associated with sources including those from the U Plant Cribs and Ditches waste sites are described in Appendix G.6 for the CP-GW-2 EU (200-UP and 200-ZP GWIAs).

It is considered unlikely that additional benthic or riparian resources would be impacted as a result of either interim remedial actions (e.g., pump and treat) or final closure activities (that are not covered in the Ecological or Cultural Resources results).

Ecological Resources

Remove, Treat and Dispose of waste involves personnel through the target (remediation) area, car and pickup truck traffic through the non-target and target (remediation) area, truck, heavy equipment (including drill rigs) traffic on roads through the non-target and target area, caps (and other containment), soil removal and contamination in the soil, vegetation control, and irrigation (for revegetation) will cause the following disturbance from remediation activities: Carry seeds or propagules (pieces of vegetation or other biological parts that can grow and/or reproduce) on tires of vehicles or blowing from heavy equipment; injure or kill vegetation or small invertebrates or small animals; vehicle traffic can make paths, compact soil, scare or displace animals, can impact animal behavior or reproductive success; affect animal dispersion and habitat use (e.g., some birds avoid nesting near roads because of song masking); displacement of animals from near roads due to increased noise or other disturbances; and heavy equipment may permanently destroy areas of the site with intense activity. Soil removal can cause more severe effects because of blowing soil (and seeds). During remediation, radionuclides or other contaminants could be released or spilled on the surface, and depending upon the type and quantity, could have adverse effects on the plants and animals on-site. Use of non-specific herbicides for vegetation control results in some mortality of native vegetation (especially native forbes), and allows exotic species to move in; it may change species composition of native communities, but it also could make it easier for native species to move in; improved methods could yield positive results. Irrigation requires a system of pumps and water, resulting in physical disturbance; repeated irrigation from the same locations could result in some soil compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area.

Alternatively, barriers could be the remediation option and involves personnel car and pickup truck traffic through the non-target and target (remediation) area, truck and heavy equipment traffic on roads through the non-target and target area, dust suppression, and irrigation (for revegetation) will cause the following disturbance from remediation activities: Carry seeds or propagules (pieces of vegetation or other biological parts that can grow and/or reproduce) on person (boots, clothes, equipment) or tires of vehicles or blowing from heavy equipment; injure vegetation or small invertebrates or small animals (e.g., insects, snakes); make paths or compact soil; scare or displace animals. Caps and other containment can cause compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. Destruction of soil invertebrates at depths of pits. Potential bringing up of dormant seeds from soil layers; disruption of ground-living small mammals and hibernation sites of snakes and other animals on-site of containment; often disrupts local aquatic environment and drainage; often non-native plants used on caps (which can become exotic/alien adjacent to the containment site). Additional water from dust suppression could lead to more diverse and abundant vegetation in areas that receive water, which could encourage invasion of exotic species; the latter could displace native plant communities; excessive dust suppression activities could lead to compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. Irrigation requires a system of pumps and water, resulting in physical disturbance; repeated irrigation from the same locations could result in some soil compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. These effects will be higher in the EU itself.

Cultural Resources

No cleanup decisions have been made for deep vadose zone, and as a result, the potential effects of cleanup on cultural resources are uncertain.

ADDITIONAL RISKS AND POTENTIAL IMPACTS IF CLEANUP IS DELAYED

Sites within the CP-LS-3 EU have contaminated the vadose zone and are suspected of contributing mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). Despite on-going treatment (WMA S-SX groundwater extraction system, U Plant area P&T system, and I-129 plume hydraulic control system), vadose zone contamination may continue (depending on the control of infiltrating water to the waste sites) and some contaminant plumes in the 200 West area may continue to increase in size and impact additional groundwater. Additional remedial actions may be required in the future.

NEAR-TERM, POST-CLEANUP STATUS, RISKS AND POTENTIAL IMPACTS

POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED AFTER CLEANUP ACTIONS (FROM RESIDUAL CONTAMINANT INVENTORY OR LONG-TERM ACTIVITIES)

Table G.5.3-6. Summary of Populations and Resources at Risk or Potentially Impacted after Cleanup.

Population or Resource		Risk/Impact Rating	Comments
Human	Facility Worker	*Not Discernible* (*ND*)-*Low*	Only risks during monitoring and maintenance activities (assumed similar to current risks)
	Co-located Person	*ND*	*De minimus* risks related to residual contamination (after capping or retrieval), which will be remedied to acceptable levels.
	Public	*ND*	*De minimus* risks related to residual contamination (after capping or retrieval), which will be remedied to acceptable levels. Access restrictions and ICs in place, when required.
Environmental	Groundwater (A&B) from vadose zone[a]	*Low* (Group A&B PCs) **Overall**: *Low*	*Current* GTM values for Group A&B primary contaminants (Table G.5.3-5): *High* (U(tot)), *ND* (Sr-90), and *Low* (other PCs with reported inventories). Sr-90 not likely to impact groundwater (**Part V**). Treatment in 200-UP assumed effective to change U(tot) rating to *Low* by end of Active Cleanup period. Also large predicted impact from changes in recharge rates used to adjust rating for U(tot) where others remained *Low* to address uncertainties in the evaluation.
	Columbia River from vadose zone[a]	Benthic: *ND* Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*	TC&WM EIS screening results indicate that exposure to radioactive and chemical contaminants from peak groundwater discharge below benchmarks for both benthic and riparian receptors (**Part V**). Dilution factor of greater than 100 million between Columbia River and upwellings.
	Ecological Resources[b]	No cleanup decisions have been made for this EU. Estimated to be Low	Monitoring activities for post-closure conditions are expected to occur. Low impacts are likely if exotic species are introduced to buffer area with level 3 and 4 resources.
Social	Cultural Resources[b]	No cleanup decisions have been made for this EU. Estimated to be:	Potential direct impacts are unknown and difficult to estimate without further information on the remediation. Any

Population or Resource		Risk/Impact Rating	Comments
		Native American Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Known **Manhattan/Cold War** Direct: None Indirect: None	remediation activity has potential for indirect impacts.

a. Threat to groundwater or Columbia River for Group A and B contaminants remaining in the vadose zone. Threats from existing plumes associated with the U Plant Cribs and Ditches EU are described in **Part V** with more detailed evaluation in Appendix G.6 (CP-GW-2).

b. For both Ecological and Cultural Resources see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report.

Long-Term, Post-Cleanup Status – Inventories and Risks and Potential Impact Pathways

The long-term, post-cleanup status is dependent on the selected remedial alternative. Regardless of that alternative selected, long-term site use restriction, vadose zone and groundwater monitoring, and maintenance must remain due to the presence of persistent contaminants in the deep vadose zone that are not amendable to excavation and the likely continued release and migration of contaminants through the vadose zone to the groundwater. DOE is expected to continue industrial exclusive activities for at least 50 years (DOE/EIS-0222-F).

PART VII. SUPPLEMENTAL INFORMATION AND CONSIDERATIONS

The U Plant Cribs and Ditches area needs to remain under DOE control to maintain a safety buffer for all remedial alternatives, including RTD, because of the deep vadose zone contamination in the area.

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ATTACHMENT A

Hanford Site-Wide Risk Review

Evaluation Unit:	U Plant Cribs and Ditches
ID:	CP-LS-3
Group:	Legacy Source
Operable Unit Cross-Walk:	200-DV-1, 200-WA-1
Related EU:	CP-LS-7, CP-DD-3, CP-GW-2
Sites & Facilities:	Liquid waste discharges in the central part of 200-W Area associated with U Plant operations.
Key Data Sources Docs:	Remedial Investigation/Feasibility Study for the 200-UP-1 Groundwater Operable Unit (DOE-RL-2009-122_DraftA) 200 West Groundwater Aggregate Area Management Study Report (DOE-RL-92-16) U Plant Source Aggregate Area Management Study Report (DOE-RL-91-52) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppG) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppE) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppF) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppD) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppC) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppA) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE-RL-2010-49_DFTA_AppB) 216-U-8 Crib and 216-U-12 Crib Vadose Zone Characterization Sampling and Analysis Plan (DOE-RL-2009-94) Action Memorandum for Non-Time-Critical Removal Action for 200-MG-2 Operable Unit (DOE-RL-2009-37) Remedial Investigation/Feasibility Study for the 200-UP-1 Groundwater Operable Unit (DOE-RL-2009-122_Rev0) Regulatory Criteria for the Selection of Vadose Zone Modeling in Support of the 200-UW-1 Operable Unit (DOE-RL-2007-34) Engineering Evaluation/Cost Analysis for the 200-MG-2 Operable Unit Waste Sites (DOE-RL-2008-45) Proposed Plan for the 200-UW-1 Operable Unit (DOE-RL-2003-24) Focused Feasibility Study for the 200-UW-1 Operable Unit (DOE-RL-2003-23-part3) Focused Feasibility Study for the 200-UW-1 Operable Unit (DOE-RL-2003-23-part2) Focused Feasibility Study for the 200-UW-1 Operable Unit (DOE-RL-2003-23-part1)

Hanford Site-Wide Risk Review

200-PW-2 Uranium Rich Process Waste Group Ou Remedial Investigation Feasibility Study Work Plan And RCRA TSD Sampling Plan (DOE-RL-2000-60_part2)
200-PW-2 Uranium Rich Process Waste Group Ou Remedial Investigation Feasibility Study Work Plan And RCRA TSD Sampling Plan (DOE-RL-2000-60_part1)
U Plant Aggregate Area Management Study Technical Baseline Report (BHI-00174)
Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE_RL-2010-49, Draft A)

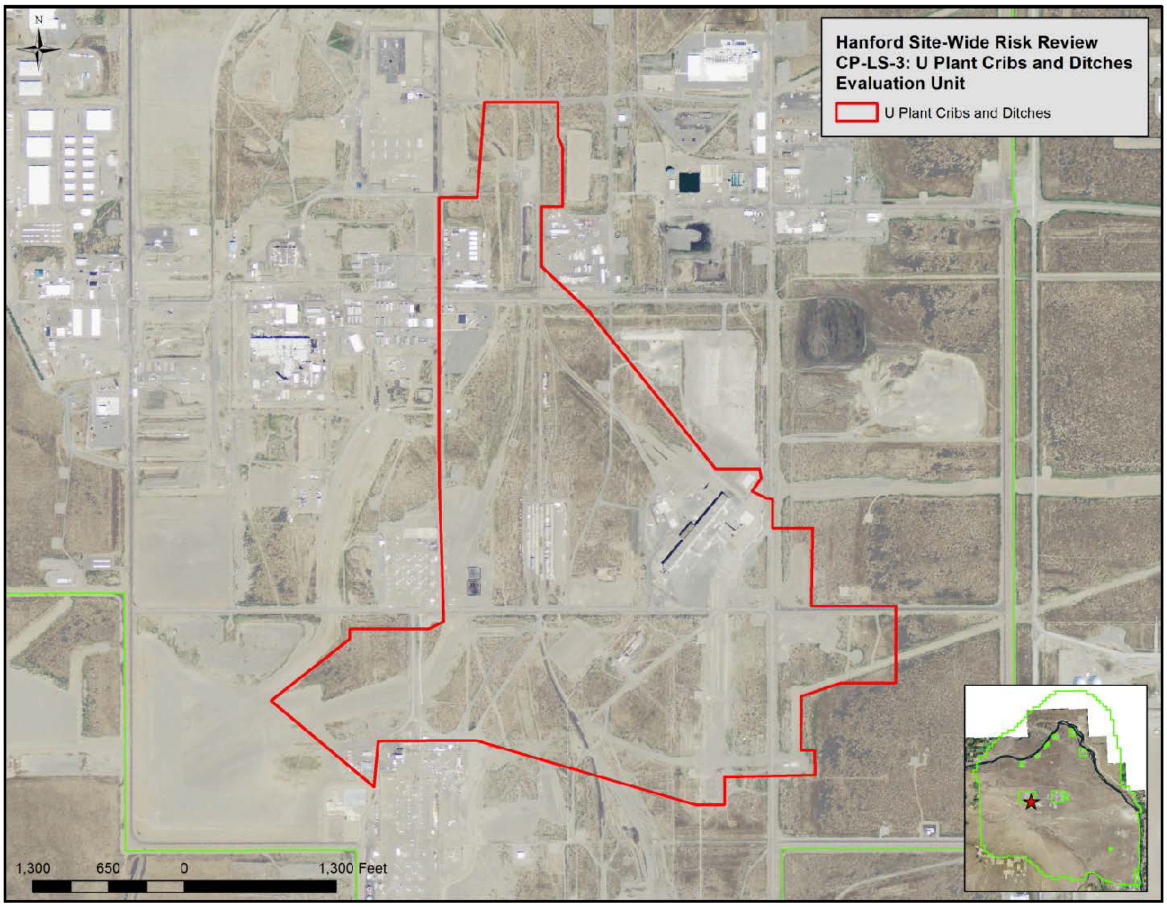

Figure 1. CP-LS-3 (U Plant Cribs and Ditches) Site Location Map

Hanford Site-Wide Risk Review

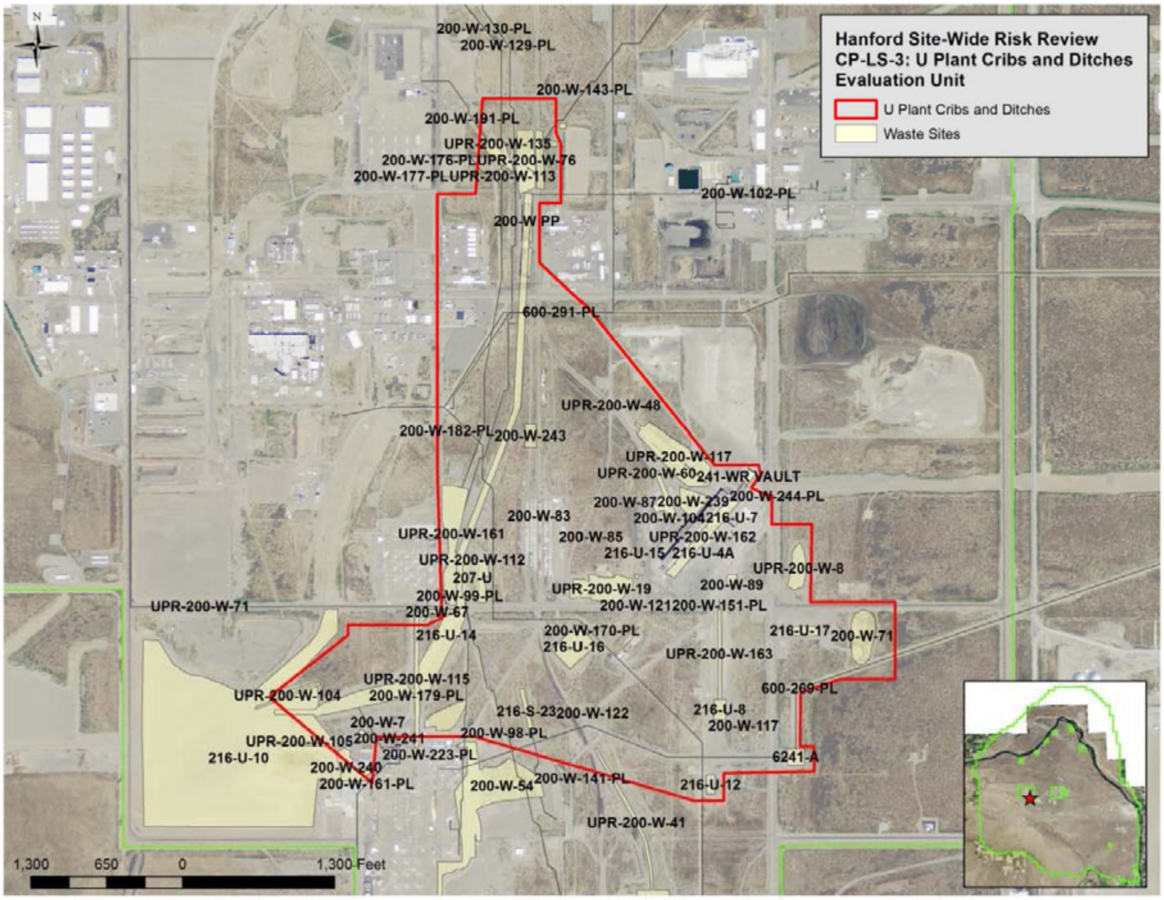

Figure 2. CP-LS-3 (U Plant Cribs and Ditches) Site Location Map and WIDS Locations

Hanford Site-Wide Risk Review

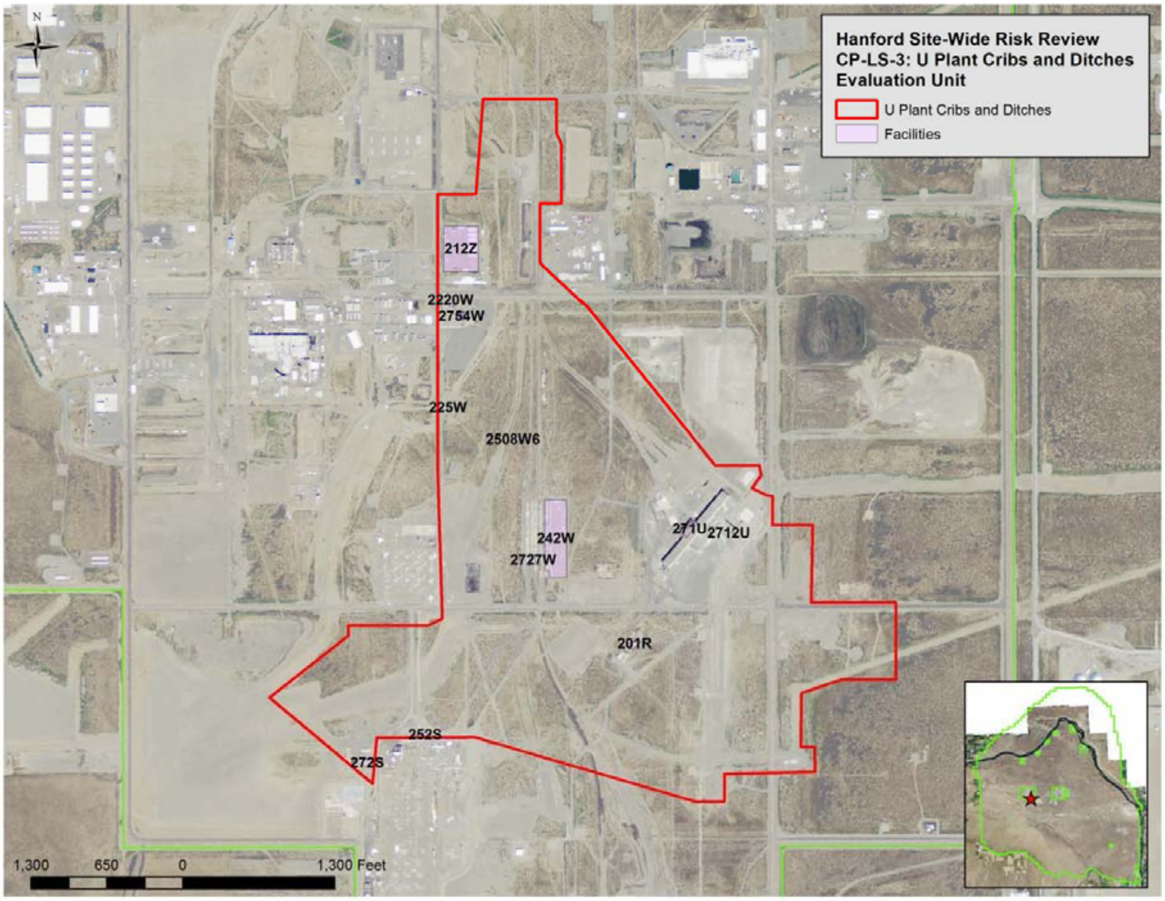

Figure 3. CP-LS-3 (U Plant Cribs and Ditches) Site Location Map and Facility Locations

Hanford Site-Wide Risk Review
CP-LS-3 (U Plant Cribs and Ditches)
Waste Site and Facility List

Site Code	Name, Aliases, Description	Feature Type	Site Status	ERS Classification	ERS Reclassification	Site Type	Site Type Category	Operable Unit	Exclude from Evaluation	Comments
200-W-7	200-W-7; 241-S-TK-1; 243-S-TK1; 243S-TK-1; 2464; IMUST; Inactive Miscellaneous Underground Storage Tank; 200-W Personnel Decontamination Facility Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-TX-302B	241-TX-302B; 241-TX-302-B Catch Tank; IMUST; Inactive Miscellaneous Underground Storage Tank; Lines V414 and V415	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-TX-302BR	241-TX-302BR; 241-TX-302BR Catch Tank; 241-TXR-302BR; IMUST; Inactive Miscellaneous Underground Storage Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
200-W-240	200-W-240; Contaminated Rabbit Feces Area South and West of 2725	Waste Site	Not Specified	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	TBD		
200-W-241	200-W-241; Contaminated Tumbleweed Fragment Areas West of Cooper Ave.	Waste Site	Not Specified	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	TBD		
200-W-54	200-W-54; Contamination Migration from 241-SX Tank Farm	Waste Site	Inactive	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	200-WA-1		
216-S-23	216-S-23; 216-S-23 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-1&2	216-U-1&2; 216-U-2; 216-U-3; 216-UR #1&2 Cribs; 361-WR (Crib 2); 216-U-1; 216-U-1 & 2	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-12	216-U-12; 216-U-12 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-16	216-U-16; UO3 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-17	216-U-17; 216-U-17 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-8	216-U-8; 216-U-9; 216-WR-1,2,3 Cribs	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-WA-1		
200-W-130-PL	200-W-130-PL; Lines V445, V563, V501 and V416 and Spare Lines V662, V663, V682 and V683; Pipelines from 241-T-151 and 241-T-152 Diversion Boxes to 241-U-151 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-131-PL	200-W-131-PL; Line V601; Spur from 241-T-152 to 241-TX-153 and 241-U-151	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-177-PL	200-W-177-PL; Direct Buried Tank Farm Lines Between 241-TXR-151 and 241-TX-155 Diversion Boxes; Lines V7615 and V7553	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-179-PL	200-W-179-PL; Lines SL100, SL101, SN216/281 and DR327; Pipelines Between 241-S-152 Diversion Box and 241-U Tank Farm	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-181-PL	200-W-181-PL; Lines V426, V427 and V428/V461; Transfer Lines Between 241-U-152 and 241-U-153 Diversion Boxes	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-183-PL	200-W-183-PL; Lines V422/V452 and V421/V453; Transfer Lines Between 241-U-151 and 241-U-152 Diversion Boxes	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-184-PL	200-W-184-PL; Drain Lines from 241-U-151, 241-U-152 and 241-U-153 Diversion Boxes to 241-U-301 Catch Tank; Line V478	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-185-PL	200-W-185-PL; Lines V450 and V451; Transfer Lines Between 241-U-151 and 241-U-153 Diversion Boxes	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
600-269-PL	600-269-PL; Cross Site Transfer Line Replacement; Lines SNL-3150 and 3160; New Cross-Site Transfer Line	Waste Site	Active	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	Not Applicable		
216-U-14	216-U-14; 216-U-14 Ditch; Laundry Ditch	Waste Site	Inactive	Accepted	None	Ditch	Pond/Ditch – Surface Liquid Disposal Site	200-WA-1		
241-TX-152	241-TX-152; 241-TX-152 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-TX-155	241-TX-155; 241-TX-155 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-U-151	241-U-151; 241-U-151 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-U-152	241-U-152; 241-U-152 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
6241-A	6241-A; 6241-A Diversion Box	Waste Site	Active	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	Not Applicable		
200-W-243	200-W-243; Lead Slag near 2727-WA Sodium Storage Building	Waste Site	Inactive	Accepted	None	Dumping Area	Burial Ground	TBD		
200-W-129-PL	200-W-129-PL; Encased Pipeline from 241-T-151 and 241-T-152 to 241-TX-155 Diversion Box; Lines V399, V405 and V411	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-143-PL	200-W-143-PL; Encased Pipeline from 241-TX-154 Diversion Box to 241-TX-152 and 241-TX-155 Diversion Boxes; Lines V383, V384, V385, V387, V388, V391, V392, and V393	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-176-PL	200-W-176-PL; Encased Transfer Lines Between 241-TX-153 Diversion Box and 241-TX-155 Diversion Box; Lines V396, V397, V401, V403, V407, V409, and V413	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-182-PL	200-W-182-PL; Encased Transfer Lines Between 241-U-152 Diversion Box and 241-TX-152 and 241-TX-155 Diversion Boxes; Lines V398, V404 and V410	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-191-PL	200-W-191-PL; Encased Transfer Line Between 241-TX-155 and 241-TY-153 Diversion Boxes; Lines V402, V406, V408 and V412	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-98-PL	200-W-98-PL; Encased Pipeline from 240-S-151 to 241-U-153 Diversion Box; V458, V459, and V460	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-99-PL	200-W-99-PL; Encased Pipeline from 241-U-151 to 241-S-151 Diversion Boxes; Lines V455 and V456	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-244-PL	200-W-244-PL; Encased Pipelines from 221-U Canyon Building to 241-WR Vault; Lines 4705, 4707, 4709, 4711, 4861, 4871	Waste Site	Inactive	Accepted	None	Encased Transfer Piping	Pipeline and associated valves, etc.	200-WA-1		
200-W-104	200-W-104; 2714-U Building; 2714-U Foundation; UO3 Storage Warehouse	Waste Site	Inactive	Accepted	None	Foundation	Storage Pad	Not Applicable		
200-W-89	200-W-89; 252-U; C8517 Substation; U Plant Electrical Substation; U-Cat Substation	Waste Site	Inactive	Accepted	None	Foundation	Infrastructure Building	200-WA-1		
200-W-234	200-W-234; 291-U Sand Filter French Drain	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	TBD		
216-U-4A	216-U-4A; 216-U-4 Dry Well; 216-U-4 Reverse Well Replacement French Drain	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-4B	216-U-4B; 216-U-4B Dry Well; 216-U-4B French Drain	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-7	216-U-7; 221-U Counting Box French Drain; 221-U Vessel Vent Blower Pit French Drain	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-WA-1		

Note that only those waste sites with a WIDS (Waste Information Data System) Classification of "Accepted" are included in the evaluation, along with non-duplicate facilities, identified via the Hanford Geographic Information System (HGIS).

Hanford Site-Wide Risk Review
CP-LS-3 (U Plant Cribs and Ditches)
Waste Site and Facility List

Site Code	Name, Aliases, Description	Feature Type	Site Status	ERS Classification	ERS Reclassification	Site Type	Site Type Category	Operable Unit	Exclude from Evaluation	Comments
200-W-112	200-W-112; Miscellaneous Stream #52; Steam Condensate	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-113	200-W-113; Miscellaneous Stream #54; North Steam Pit	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-114	200-W-114; Miscellaneous Stream #55	Waste Site	Unknown	Discovery	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	TBD		
200-W-117	200-W-117; Miscellaneous Stream #140; Steam Condensate MSS-TRP-005	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-118	200-W-118; Miscellaneous Stream #141; Steam Condensate MSS-TRP-006	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1		
200-W-119	200-W-119; Miscellaneous Stream #142; Steam Trap 007	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-120	200-W-120; Miscellaneous Steam Trap 008; Miscellaneous Stream #143	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-121	200-W-121; Miscellaneous Steam Trap 009; Miscellaneous Stream #144	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-W-122	200-W-122; Miscellaneous Steam Trap 014; Miscellaneous Stream #145	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
216-U-4	216-U-4; 216-U-4 Dry Well; 222-U Dry Well; 222-U-110 Dry Well; 216-U-2	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1		
200-W PP	200-W PP; 284-W-B; 200 West Powerhouse Ponds; 200-W Powerhouse Pond	Waste Site	Inactive	Accepted	Consolidated	Pond	Crib - Subsurface Liquid Disposal Site	Not Applicable		
216-U-10	216-U-10; 216-U-10 Pond; 231 Swamp; U Swamp; 216-U-1	Waste Site	Inactive	Accepted	None	Pond	Pond/Ditch -- Surface Liquid Disposal Site	200-CW-1		
600-291-PL	600-291-PL; LERF Line; TEDF Line; 200 Area Treated Effluent Disposal Facility Pipeline	Waste Site	Active	Accepted	None	Process Sewer	Pipeline and associated valves, etc.	Not Applicable		
200-W-102-PL	200-W-102-PL; Pipeline from Laundry, Powerhouse and Shops to 216-U-14 Ditch; 200-W-102	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	200-OA-1		
200-W-141-PL	200-W-141-PL; Pipeline Connecting 200-W-139-PL Pipeline to 216-S-23 Crib; V547	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-151-PL	200-W-151-PL; 200-W-42 Pipe Remaining Under 16th Stree:	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-161-PL	200-W-161-PL; Line 557; Pipeline from 242-S to 216-S-25 Crib	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-168-PL	200-W-168-PL; Pipelines from 241-U-110 Tank to 216-U-3 Crib and 216-U-14 Ditch	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-170-PL	200-W-170-PL; 216-U-15 Crib Pipeline	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-194-PL	200-W-194-PL; Pipeline from 241-U-361 Settling Tank to 216-U-1 and 216-U-2 Cribs	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-222-PL	200-W-222-PL; 207-U Retention Basin Outlet Pipeline to the 216-U-14 Ditch	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-W-223-PL	200-W-223-PL; Pipeline from 242-S Evaporator to 216-U-14 Ditch	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
241-WR VAULT	241-WR VAULT; 241-WR Vault (Tanks -001 Through -009); 241-WR-01 Thru 09; 244-WR Vault; 296-U-6 Stack; IMUST; Inactive Miscellaneous Underground Storage Tank; 241WR; 241-WR Diversion Station Vault	Waste Site	Inactive	Accepted	None	Receiving Vault	Underground Storage Tank	200-WA-1		
207-U	207-U; 207-U Retencion Basin	Waste Site	Active	Accepted	None	Retention Basin	Crib - Subsurface Liquid Disposal Site	200-WA-1		
241-U-361	241-U-361; 241-U-361 Settling Tank; 361-U-TANK; IMUST; Inactive Miscellaneous Underground Storage Tank	Waste Site	Inactive	Accepted	None	Settling Tank	Underground Storage Tank	200-WA-1		
200-W-71	200-W-71; Undocumented Burn Pit; Undocumented Trench	Waste Site	Inactive	Accepted	None	Trench	Burial Ground	200-WA-1		
216-T-20	216-T-20; 216-T-20 Crib; 216-TX-2; 241-TX-155 Contaminated Acid Grave	Waste Site	Inactive	Accepted	None	Trench	Crib - Subsurface Liquid Disposal Site	200-WA-1		
216-U-15	216-U-15; 388-U Tank Dumping; U-152 Interface Crud Burial; UN-200-W-158; UN-216-W-10; UPR-200-W-125	Waste Site	Inactive	Accepted	None	Trench	Crib - Subsurface Liquid Disposal Site	200-WA-1		
200-W-239	200-W-239; 211-U and 211-UA Potential Asbestos in Soil; Post Remediation URMA	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	TBD		
200-W-67	200-W-67; Contaminated Soil at the Corner of Cooper and 16th Street	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-77	200-W-77; Posted Contamination Area East of 216-U-14 Ditch	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-83	200-W-83; Contamination Area North of 2727W	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-85	200-W-85; Soil Contamination Area East of 2727 W	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-86	200-W-86; Contamination Area Around Light Pole	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-87	200-W-87; Unplanned Release on Chemical Spur Railroad Track Northwest of 221-U Plant	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-104	UPR-200-W-104; 216-U-10 Pond Leach Trench; U Pond Fingers; UN-216-W-14	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-105	UPR-200-W-105; 216-U-10 Pond Leach Trench; UN-216-W-15	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-111	UPR-200-W-111; Sludge Trench at 207-U; UN-216-W-21	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-112	UPR-200-W-112; Sludge Trench at 207-U; UN-216-W-22	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-113	UPR-200-W-113; Contamination Areas Around 241-TX-155 Diversion Box; Soil Contamination East of 241-TX; UN-200-W-113; UN-216-W-23	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-115	UPR-200-W-115; Ground Contamination Above Transfer Line Along Cooper Street; UN-216-W-25	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-117	UPR-200-W-117; 221-U Railroad Cut Contamination; Railroad Track Contamination; UN-200-W-117; UN-216-W-27	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-118	UPR-200-W-118; Contamination at 211-U; UN-200-W-118; UN-216-W-28	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-131	UPR-200-W-131; Release from 241-TX-155	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		
UPR-200-W-135	UPR-200-W-135; Release from 241-TX-155; UN-200-W-135	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		

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Hanford Site-Wide Risk Review
CP-LS-3 (U Plant Cribs and Ditches)
Waste Site and Facility List

Site Code	Name, Aliases, Description	Feature Type	Site Status	ERS Classification	ERS Reclassification	Site Type	Site Type Category	Operable Unit	Exclude from Evaluation	Comments
UPR-200-W-138	UPR-200-W-138; UPR-200-W-22; 221-U Vessel Vent Blower Pit French Drain; UN-200-W-138; UN-200-W-22; UN-216-W-11	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-161	UPR-200-W-161; Large Area East of 241-U Tank Farm; UN-200-W-161; UN-216-W-35	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-162	UPR-200-W-162; Contaminated Area on East Side of 221-U; UN-216-W-37	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-163	UPR-200-W-163; Contaminated Vegetation at the 216-U-8 Pipeline (200-W-42-PL); UN-216-W-33	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-165	UPR-200-W-165; Contamination Area East of 241-S; UN-216-W-30	Waste Site	Inactive	Accepted	Interim No Action	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-19	UPR-200-W-19; 241-U-361 Overflow; UN-200-W-19	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-28	UPR-200-W-28; Release from 241-TX-155 Diversion Box; UN-200-W-28	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-33	UPR-200-W-33; Ground Contamination at 224-U; UN-200-W-33	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-39	UPR-200-W-39; 224-U Buried Contamination Trench; UN-200-W-39	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-WA-1		
UPR-200-W-41	UPR-200-W-41; Railroad Contamination; REDOX Railroad Cut Contamination; UN-200-W-41	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-48	UPR-200-W-48; Contaminated Railroad Track Near 221-U; UN-200-W-48	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-5	UPR-200-W-5; Overflow at 241-TX-155; UN-200-W-5	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-55	UPR-200-W-55; Uranium Powder Spill at 224-U; UN-200-W-55	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-6	UPR-200-W-6; Contamination Spread from 241-U-151 and 241-U-152 Diversion Boxes; UN-200-W-6	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-W-60	UPR-200-W-60; Railroad Contamination; UN-200-W-60	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-71	UPR-200-W-71; Contamination Spread from 16th Street to Dayton Ave.; UN-200-W-71	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-75	UPR-200-W-75; Contamination Found at 241-TX-155; UN-200-W-75	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	TBD		
UPR-200-W-78	UPR-200-W-78; UN-200-W-78; UO3 Powder Spill at 224-U	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-8	UPR-200-W-8; 200-W-5; Old Burial/Burning Pit; UN-200-W-8; U-Plant Burning Pit/Burial Ground	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-OA-1		
241-UX-302A	241-UX-302A; Lines V380 and V381; 241-U-302 Catch Tank; 241-UX-302; 241-UX-302 Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1	X	Included in U Plant Eval.
200-W-248-PL	200-W-248-PL; Direct Buried lines from 241-UX-154 to 200-W-244-PL and 241-WR Vault; Line Numbers 4866, 4976 and 4977	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	200-WA-1	X	Included in U Plant Eval.
241-UX-154	241-UX-154; 241-UX-154 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1	X	Included in U Plant Eval.
200-W CSLA	200-W CSLA; Construction Surface Laydown Area; Non-Rad Burial Ground; 200-W Construction Surface Laydown Area	Waste Site	Inactive	Accepted	Rejected	Dumping Area	Burial Ground	Not Applicable	X	Rejected
200-W-57	200-W-57; Area West of 2718-U Fence; Excess Equipment Laydown Area Identified in RCRA General Inspection #200WFY97 Item #10	Waste Site	Inactive	Not Accepted	None	Dumping Area	Storage Pad	Not Applicable	X	Not Accepted
200-W-100-PL	200-W-100-PL; Encased Pipeline from 241-UX-154 to 241-SX-152 and 241-S-151 Diversion Boxes; Lines V762/4858, V503/4700 and V505/4701	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in U Plant Eval.
200-W-105-PL	200-W-105-PL; Encased Lines V375, V376, V382, 4877, 4851 and 4859/4703, 4878, 4852, 4875, 4897, 4707, 4701, 4700, 4855, 4854 and 4853; Encased Transfer Line between 241-UX-154 Diversion Box and 241-TX-155-Diversion Box and between 241-UX-154 Diversion Bo	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in U Plant Eval.
600-284-PL	600-284-PL; Cross Site Transfer Pipeline; Lines V360, V361, V362, V363, V364 and V356; Old Cross Site Transfer Line; Original Cross Site Transfer Pipeline; Piping Associated with UPR-600-20, Cross Site Transfer Line	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in 200 Area HLW Transfer Line Eval.
200-W-145	200-W-145; Hidden Wells South of U-Plant; U Plant Dry Wells	Waste Site	Inactive	Not Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable	X	Not Accepted
200-W-107	200-W-107; 222-U Building Stormwater Runoff; Miscellaneous Stream #685	Waste Site	Inactive	Not Accepted (Proposed)	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1	X	Not Accepted
200-W-108	200-W-108; 222-U Building Stormwater Runoff; Miscellaneous Stream #687	Waste Site	Inactive	Not Accepted (Proposed)	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1	X	Not Accepted
200-W-109	200-W-109; 222-U Building Stormwater Runoff; Miscellaneous Stream #521	Waste Site	Inactive	Not Accepted (Proposed)	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1	X	Not Accepted
200-W-110	200-W-110; Miscellaneous Stream #393	Waste Site	Unknown	Not Accepted (Proposed)	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	TBD	X	Not Accepted
200-W-111	200-W-111; 222-U Building Stormwater Runoff; Miscellaneous Stream #394	Waste Site	Inactive	Not Accepted (Proposed)	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-WA-1	X	Not Accepted
224-U CNT	224-U CNT; 224-U Condensate Neutralization Tank; 224-U Process Condensate Neutralization Tank; 224-U-TK-C-5; Process Condensate Elementary Neutralization Unit; Tank TK-C-5	Waste Site	Inactive	Accepted	None	Neutralization Tank	Process Building	Not Applicable	X	Included in U Plant Eval.
270-W	270-W; 270-W Neutralization Tank; 270-W Tank; IMUST; Inactive Miscellaneous Underground Storage Tank	Waste Site	Inactive	Accepted	None	Neutralization Tank	Underground Storage Tank	200-WA-1	X	Included in U Plant Eval.
271-U	271-U; 271-U Building; 271-U Office Building	Waste Site	Inactive	Accepted	None	Office	Infrastructure Building	200-CU-1	X	Included in U Plant Eval.
221-U	221-U; 221-U Building; 221-U Canyon Building; 276-U; U Plant	Waste Site	Inactive	Accepted	None	Process Unit/Plant	Process Building	200-CU-1	X	Included in U Plant Eval.
276-U	276-U; 276-U Solvent Facility; 276-U Solvent Handling Facility; 276-U Solvent Recovery Facility	Waste Site	Inactive	Accepted	Rejected	Process Unit/Plant	Process Building	Not Applicable	X	Rejected

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