APPENDIX F.7

B PLANT (CP-DD-2, CENTRAL PLATEAU)
EVALUATION UNIT SUMMARY TEMPLATE

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PART I. EXECUTIVE SUMMARY

EU LOCATION

The B Plant Facility is located in the Hanford site's 200 East Area and is adjacent to the Waste Encapsulation and Storage Facility (WESF [225-B Building]). This EU includes the B Plant Canyon, ancillary buildings (e.g. 224-B), structures, and associated near-surface contaminated soils (see Part VII Supplemental Information for details). It also includes the D&D of WESF after the capsules are moved into dry storage.

RELATED EUS

CP-LS-8, CP-OP-3

PRIMARY CONTAMINANTS, CONTAMINATED MEDIA AND WASTES

The B Plant has been categorized as a hazard category 2 nuclear facility. The primary contaminants are large inventories of Cs-137 and Sr-90 in the 221-B Canyon and A-D Filters. The canyon and process cells were extensively decontaminated of residual plutonium when B Plant was prepared for the cesium separations mission in the 1960s. Some plutonium may remain in the air tunnel, the underground ducts, and other portions of the canyon and old ventilation system; however, the only known or estimated remaining plutonium is in the old ventilation system filters [1].

In addition, small quantities of Pu-238 to 242 and Am-241 are present in the 224-B deactivated plutonium concentration building (estimated total of 132 Curies decayed to 2008 values).[2] Underground pipes are also believed to be contaminated including the pipes between the 212-B and 224-B Buildings, however the levels of contamination in these pipes are unknown.

From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. With the exception of the ACT ventilation system, all of the old operating systems in B Plant were deactivated (e.g., shut down, de-energized of electrical power, and abandoned in place). Equipment that could contain solutions was drained or pumped empty as much as possible using the existing equipment configuration. Liquid chemical inventories were removed and the significant quantity of dry chemical that remains in the canyon is stable, dry tri-sodium phosphate. Small amounts of materials may remain as dried heels in tanks but this material is not expected to be released in accident scenarios. The majority of hazardous material consists of fairly adherent radioactive films and residues in deactivated equipment and structures.

After removal of the cesium and strontium capsules currently stored in water pools in the Waste Encapsulation and Storage Facility (225-B Building) the WESF building will contain Cs-137, Sr-90, and ingrown decay products (e.g., barium 137 [Ba-137m, Ba-137] from Cs-137, yttrium-90 [Y-90] from Sr-90) residing in: 1) the hot cells, hot cell-connected ventilation ductwork, and hot cell-connected HEPA filters

[1] CH2MHill Plateau Remediation Company, B Plant Documented Safety Analysis, HNF-14804, Revision 4, January 30, 2013.
[2] CH2MHill Plateau Remediation Company, 224-B Plant Documented Safety Analysis, CP-18179, Revision 7, April 10, 2013.

(combined total activity of ~300 kCi), and 2) the pool water cleaning ion exchange module [WIXM] (varying radioactivity with maximum at 56 kCi).[3]

BRIEF NARRATIVE DESCRIPTION

The B Plant facility was constructed in 1945 and designed to chemically process spent nuclear fuel using the bismuth-phosphate process. B Plant began separations processing using actual irradiated uranium feed from Hanford's B and D Reactors on April 13, 1945. Process solutions were transferred from the 221-B Canyon Building to the 224-B Building process cells for purification and plutonium concentration. The original separations process used at B Plant produced a plutonium nitrate product that was shipped to Los Alamos, New Mexico, for fabrication into atomic weapons. In 1952, due to the greater efficiency of a new radiochemical separations process at Hanford known as reduction-oxidation, B Plant closed as a plutonium separations facility.

In the early 1960s, the decision was made to retrofit the 221-B Building for a large waste-partitioning mission to separate strontium-90 (90Sr) and cesium-137 (137Cs) from high-level wastes already stored in Tank Farms associated with the Plutonium-Uranium Extraction (PUREX) and Reduction-Oxidation (REDOX) Plants, as well as PUREX acid wastes and sludge. During the separations mission, individual strontium and cesium solutions were transferred to WESF for processing, encapsulation, and storage in pool cells. B Plant supported WESF by providing utility support (e.g., water, chemical supplies) and effluent discharge storage and transfer to the Hanford Tank Farms.

B Plant entered a cleanout and stabilization program in 1992, was declared an inactive surplus facility, and entered a deactivation program in 1995 prior to being declared as deactivated in 1998. In 1995, DOE formally declared B Plant an excess facility. From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. Deactivating B Plant involved eliminating the WESF operations' reliance on the 221-B Building, minimizing the hazards at B Plant by removing the majority of residual process products, isolating the remaining hazards, and shutting down all B Plant processes.

There are currently no operating processes at B Plant since it is deactivated. During the current facility life-cycle stage, planned facility activities will consist primarily of S&M and storage of incidental goods and supplies required for S&M activities of B Plant.

Located adjacent to B Plant in the 200E Area of the Hanford Site, WESF is designed to ship, inspect, decontaminate, and store strontium and cesium capsules that were produced in past campaigns at WESF. The capsules were produced in WESF from 1974 to 1985 to reduce the quantity of Sr-90 and Cs-137 in liquid waste in underground tanks. The Sr-90, in the form of strontium fluoride, and the Cs-137, in the form of cesium chloride, were doubly encapsulated in WESF hot cells and then stored underwater in WESF pool cells. Current WESF operations consist of safely storing the cesium and strontium capsules within a series of interconnected pools within the WESF building. The current scope of the WESF mission is limited to facility maintenance activities: inspection, decontamination, and movement of capsules; and storage and surveillance of capsules.

Future plans at WESF are divided into two phases. The first phase of which is to upgrade the ventilation system and stabilize the residual (legacy) contamination in hot cells A through F, the below grade K3 ventilation system ductwork, and the K3 filter housings. Stabilization by grouting of the majority of the hot cells will be performed by grouting in place all waste and remaining equipment, and is intended to

[3] CRESP Interim Report, Appendix H.4, Waste Encapsulation and Storage Facility (WESF) (CP-OP-3, Central Plateau), Evaluation Unit Summary Template.

minimize the potential for the spread of contamination from the hot cells without impacting any existing facility processes (i.e., hot cells being stabilized are inactive). The long-term, tentative plan is to remove the Cs and Sr capsules from the pools by packaging the capsules into dry storage overpacks and storing them on the Hanford Site.[4]

No cleanup decisions have been made for the Remaining Waste Treatment, Storage and Disposal Facilities such as WESF. Closure of facilities will be according to approved operating plans and closure plans (e.g., RCRA Closure Plans); consequently, cleanup actions will be determined and accomplished in accordance with applicable regulatory and permit/license requirements.[5] No information is currently available regarding the final D&D of the WESF facility and if it will be carried out in combination with or separate from the D&D of the B Plant canyons and other facilities.

The mapped area of this EU (see Figure F.7-1) also includes 118 miscellaneous waste sites and 48 active and inactive structures. Many of the miscellaneous waste sites, such as 216-B-13 which is a French drain associated with the 291-B stack are discussed in the *B Plant Cribs & Trenches* (CP-LS-8) risk review.

SUMMARY TABLES OF RISKS AND POTENTIAL IMPACTS TO RECEPTORS

Table F.7-1 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 B Plant facilities; a Co-located Person (CP) is an individual located 100 meters from the physical boundaries of the facility; and the Public is an individual located at the closest point on the Hanford Site boundary not subject to DOE access control. The nearest site boundary is 16,630 m (10.33 mi) to the southwest and was used as the minimum distance to the MOI (Public) receptor. 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 F.7-1 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[6]

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.

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[4] CRESP Interim Report, Appendix H.4, Waste Encapsulation and Storage Facility (WESF) (CP-OP-3, Central Plateau), Evaluation Unit Summary Template

[5] US Department of Energy, Richland Operations Office*, 2016 Hanford Lifecycle Scope, Schedule and Cost Report*, Table B-3, DOE/RL-2015-10, Revision 0

[6] References throughout this Evaluation Unit Summary Template supporting analyses related to Ecological Resources and/or Cultural Resources may be found in Appendices J and K, respectively. Refer to the specific EU when searching for the reference.

Cultural Resources[7]

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 F.7-1. 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: Surveillance & Maintenance	**From Cleanup Actions:** Interim D&D
Human Health	Facility Worker	***S&M***: Med-High (Low)	Med-High (Low)
	Co-located Person	***S&M***: Med-High (Low)	Med-High (Low)
	Public	***S&M***: ND (ND)	ND
Environmental	Groundwater (A&B) from vadose zone[a]	*ND* – Sr-90 and U(tot)[c], *Low* – Others with reported inventories **Overall**: *Low*	*ND* – Sr-90 and U(tot)[c], *Low* – Others with reported inventories **Overall**: *Low*
	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]	ND	ND to Low
Social	Cultural Resources[b]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: None **Manhattan/Cold War** Direct: Known Indirect: Known	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: None **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 2015) remaining in the vadose zone

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. There is no current Sr-90 or total uranium plume associated with the CP-DD-2 EU waste sites and thus current ratings are *ND*. The corresponding ratings after the Active Cleanup period are *Low* to account for uncertainties in the evaluation.

SUPPORT FOR RISK AND IMPACT RATINGS FOR EACH POPULATION OR RESOURCE HUMAN HEALTH

Current

B Plant is nonoperational, deactivated, and undergoing long-term S&M.

Seismic Event: The worst-case event is a seismic event of greater magnitude than the design basis. It was assumed to cause: Failure of both the 221-B and 224-B canyon buildings resulting in loss of the

confinement function; complete failure of the 291-B retired filters and the sand filter; complete failure of the 212-B Cask Station; complete failure of the ACT filter; and, shock/ vibration impacts to radioactive material in the canyon from seismic motions and displacement of equipment. The bulk of the canyon inventory at risk is adherent contamination confined in the process cells, and therefore, the seismic event assumed an unfiltered ground level airborne release. The event frequency was conservatively assumed to be classified as "anticipated". The resulting combined FW and CP dose is estimated to be 35.4 rems and the combined dose to the Public is 0.019 rems.[7,8]

Unmitigated Risk: Facility Worker – High; CP – High; Public – ND

The major receptors at risk are the S&M facility worker and co-located person in close proximity to the facility. The event is NRH and the material at risk is limited to the residual materials; no safety-class or safety-significant SSCs and no technical safety requirements reduce potential consequences to the target receptors were identified. Applicable SMPs include the emergency preparedness program. There was considerable conservatism in the modeling, such as assuming all activity is affected by the building collapse when significant quantities of radioactive material would be shielded by piping or vessels.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

221-B Canyon Roof Collapse: This scenario assumes that snow or ash loads or an impact from a crane operating in the vicinity of B Plant collapses the concrete roof. A canyon roof collapse accident could result in some contamination spread from the B Plant canyon into WESF through the pipes and doorways between these two buildings, or cause a release to the environment through the roof opening. The event is similar to the seismic event except the retired filters are not assumed to collapse. This is conservative since much of the activity is in cells or tanks and would not be impacted by the roof collapse. The resulting FW and CP dose is estimated to be 8.0 rems and the dose to the Public is 0.004 rems.

Unmitigated Risk: Facility Worker – Medium; CP – Medium; Public – ND

The major receptors at risk are the S&M facility worker and co-located person in close proximity to the facility. The considerable conservatism in the modeling, such as assuming all activity is affected by the building collapse when significant quantities of radioactive material would be shielded by piping or vessels. Given these conservative assumptions and estimated resulting low risks, no safety-class or safety-significant SSCs and no technical safety requirements (TSRs) reduce potential consequences to the target receptors were identified. Applicable SMPs include the emergency preparedness program.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

224-B Canyon Roof Collapse: This scenario assumes that impact from a crane operating in the vicinity of B Plant collapses the concrete roof. The entire canyon inventory at risk and the release was modeled based on powder rather than fixed material or thin film residuals within equipment. The event frequency was conservatively assumed to be "anticipated". The resulting FW and CP dose is estimated to be 13.0 rems and the dose to the Public is 0.0082 rems.

Unmitigated Risk: Facility Worker – Medium; CP – Medium; Public – ND

[7] CH2MHill Plateau Remediation Company, B Plant Documented Safety Analysis, HNF-14804, Revision 4, January 30, 2013.
[8] CH2MHill Plateau Remediation Company, 224-B Plant Documented Safety Analysis, CP-18179, Revision 7, April 10, 2013.

The major receptors at risk are the S&M facility worker and co-located person in close proximity to the facility. Given these conservative assumptions and estimated resulting low risks, no safety-class or safety-significant SSCs and no technical safety requirements (TSRs) reduce potential consequences to the target receptors were identified. Applicable SMPs include the emergency preparedness program.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

224-B Building Fire: The bounding fire event is a fire that impacts the entire 224-B building and its entire inventory. Although some plume rise might be expected, the accident analysis is conservatively modeled as a ground level release. The event is a short duration event, so an acute ground release without plume meander is used to model the potential consequences. From the HA, the assigned frequency category for this scenario is "anticipated." The resulting FW and CP dose is estimated to be 7.94 rems and the dose to the Public is 0.0049 rems.

Unmitigated Risk: Facility Worker – Medium; CP – Medium; Public – ND

The major receptors at risk are the S&M facility worker and co-located person in close proximity to the facility. Given these conservative assumptions and estimated resulting low risks, no safety-class or safety-significant SSCs and no technical safety requirements (TSRs) reduce potential consequences to the target receptors were identified. 224-B Building structure is designated as defense-in-depth and ITS.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

224-B Contaminated Equipment Removal: For this analysis, the most contaminated single NDA location within the 224-B Building is assumed to be the contaminated equipment being removed. The 652 g inventory associated with the D-3 tank was chosen since it has the largest reported inventory for any single location within the facility. In this scenario, the equipment is dropped, resulting in a ground-level release of material. From the HA, a conservative frequency of "anticipated" is assumed. The resulting FW and CP dose is estimated to be 7.08 rems and the dose to the Public is 0.0044 rems.

Unmitigated Risk: Facility Worker – Medium; CP – Medium; Public – ND

The major receptors at risk are the S&M facility worker and co-located person in close proximity to the facility. Use of proper radiological safety practices will ensure as low as reasonably achievable management, and that barriers, personal protective equipment, and other applicable controls are applied. The 224-B building structure is designated as defense-in-depth.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

Fire in Retired 221-B Filters: The 221-B building process ventilation system was equipped with HEPA filtration to reduce the release of radioactive particles to acceptable levels. The process ventilation filters are now isolated from the canyon and the fans and stack, but the filters still contain a significant inventory of radioactive material. Failure of the containment could result in a release of radionuclides to the environment. One possible failure mode is a fire that releases some fraction of the inventory of material that is captured in the filters. The resulting FW and CP dose is estimated to be 4.9 rems and the dose to the Public is 0.0024 rems.

Unmitigated Risk: Facility Worker – Low; CP – Low; Public – ND

Given the conservative assumptions and estimated resulting low risks, no safety-class or safety-significant SSCs and no technical safety requirements (TSRs) reduce potential consequences to the target receptors were identified. While no safety-class or safety-significant SSCs are required, the passive features of the retired filter structure are recognized as DID ITS SSCs that provide confinement

of hazardous materials and protection of filter material from impact. Applicable SMPs include the emergency preparedness program.

Mitigation: Facility Worker – Low; CP – Low; Public – ND

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

The several radiological event scenarios identified with current S&M activities at the B Plant site would still likely be present during the early D&D phases, but the most serious consequences would diminish as contaminated areas and equipment are removed and/or grouted in place.

The D&D of the U Canyon is being used as a pilot for D&D of the other four canyons at the Hanford Site, and CHPRC has developed an extensive review of lessons learned that will benefit similar work that may be carried out at B Plant in the future. The selected remedial action for the U Plant calls for 1) consolidating and grouting equipment currently in the 221-U canyon into the process cells, 2) filling the process cell galleries, hot pipe trench, ventilation tunnel, drains and other voids below the operating deck and crane cabway deck levels with grout, 3) demolition of the canyon roof and walls to the approximate level of the canyon deck, and 4) burial of the remaining canyon structure beneath an engineered barrier. The cleanup remedy for U-Plant is to largely leave contamination in place and contain it in such a fashion that it presents no unacceptable risk to human health or the environment.[9]

The B Plant and U Plant are very different with respect to their prior uses and levels of residual radiological contamination, but the two U Plant DSAs (HNF-13829 Revisions 4 [OUO Doc] and 5) provide discussions of some of the accidents or events that could cause radiological exposure to workers and co-located persons during D4 of the PUREX canyon facilities. The primary risks were determined to be a seismic event and accidents involving size reduction and waste management types of activities, that are required for the preparations for the canyon demolition but which could cause a fire.

The WESF Stabilization and Ventilation Project will stabilize the residual (legacy) contamination by filling the A through F Cells, hot pipe trench, K3 exhaust ductwork between hot cells and K3 filter, the K3 filter housings and the K3 filter pits with grout. No equipment/material will be removed from the hot cells before grouting (e.g., tanks, conduit, filters, etc.) and the hot cells will not be decontaminated (other facility areas may require minor decontamination efforts to support work activities). Sealing of windows and manipulator ports will also be performed. The risks to human health during this stabilization process have been reviewed and discussed in the CRESP Interim Report, Appendix H.4.

No information is currently available regarding the final D&D of the WESF facility and if it will be carried out in combination with or separate from the D&D of the B Plant canyons and other facilities.

Groundwater, Vadose Zone, and Columbia River

Current

The CP-DD-2 (B Plant) EU is located in the 200 East Area in the southern part of the 200-BP groundwater interest area (GWIA). The 200-BP GWIA is described in the CP-GW-1 EU (Appendix D.5). The saturated zone beneath the CP-DD-2 area has elevated levels of nitrate and total uranium based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html); CP-DD-2 waste sites are not suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev.

[9] CH2MHIll Plateau Remediation Company 2008, *Remedial Design/Remedial Action Work Plan for the 221-U Facility, DOE/RL-2006-21, Revision 0*, Prepared for the U.S. Department of Energy Assistant Secretary of Environmental Management U.S. Department of Energy, December 2008.

0)[10]. The current threats to groundwater and the Columbia River from contaminants already in the 200-BP groundwater are evaluated as part of the CP-GW-1 EU (Appendix D.5). However, current threats to groundwater corresponding to only the CP-DD-2 EU contaminants *remaining* in the vadose zone (Table F.7-6) has an overall rating of *Low* (related to various primary contaminants) as described in **Part V**. In the 200 East Area, contaminated 200-BP groundwater is monitored (DOE/RL-2016-09, Rev. 0). As indicated in **Part V**, no plumes have been linked to CP-DD-2 waste sites. Threats from contaminated groundwater in the 200 East Area to contaminate additional groundwater or the Columbia River are evaluated as part of the CP-GW-1 EU (Appendix D.5).

For the 200-BP GWIA, no plume from the CP-DD-2 EU currently 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**, remedial actions have not been selected for many CP-DD-2 EU waste sites. Furthermore, contaminants from the CP-DD-2 EU waste sites are not suspected of impacting the vadose zone or groundwater; treatment options are still being considered for the 200 East groundwater. Secondary sources in the vadose may threaten to impact groundwater in the future, including the Active Cleanup period. The *Low* ratings (for all primary contaminants with reported inventories) for the CP-DD-2 EU waste sites (Table F.7-6) are associated with some mobile primary contaminants that may in the future impact groundwater in the 200 East Area (CP-GW-1, Appendix D.5).

As described in **Part V**, the groundwater transport analysis in the TC&WM EIS (Appendix O, DOE/EIS-0391 2012) for the CP-TF-6 (B-BX-BY Tank and Waste Farms) EU, which is the considered representative of the B Plant EU for the purpose of this evaluation, indicates there is little impact of emplacing the engineered surface barrier (and resulting reduction of infiltrating water) on the predicted peak groundwater concentrations (relative to thresholds) at the B Barrier[11]. This result is not ascribed to an ineffective barrier, but instead to large amounts of contaminants already present in the subsurface and possible influence from sources outside the B Plant EU.

There are only small very quantities of primary contaminants (Table F.7-2 through Table F.7-4) associated with the two UPRs that constitute the CP-DD-2 vadose zone inventory. Furthermore, expected remedial options would tend to limit infiltrating water, which is the primary motive force to release and transport contaminants to groundwater. However, surface barrier emplacement has not begun in the area. The TC&WM EIS screening groundwater results for the area near the B Plant does indicate that some contaminants in the CP-DD-2 waste sites would be present at the B Barrier at predicted concentrations that would exceed thresholds, but the inventories for the same primary

[10] Several waste sites, e.g., 216-B-4, 216-B-5, 216-B-6, 216-B-10A/B, 216-B-12, 216-B-13, 216-B-55, 216-B-60, 216-B-62, were placed in both CP-DD-2 and CP-LS-8 (B Plant Cribs and Ditches); however, these sites are evaluated as part of CP-LS-8 (Appendix G.5.6).

[11] 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 B Barrier is the closest to the B-BX-BY Tank and Waste Farms EU and is considered representative of the subsurface near the B Plant EU. Despite including sources other than those for the B Plant EU, the analysis in the TC&WM EIS was considered the most reasonable information to assess the impact of the engineered surface barrier emplacement.

contaminants are insignificant relative to the other sources in the Central Plateau and thus these plumes are not considered linked to CP-DD-2 sources. It is also considered unlikely that these small inventories would lead plumes areas to increase over time. Because current ratings are already *Low* for primary contaminants[12], these will not be changed based on radioactive decay or recharge impacts or lack of treatment in 200 East. 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 the ratings for current threats provided in Table F.7-6 would not be modified (at the end of the Active Cleanup period). The overall rating thus remains *Low* (various contaminants) at the end of the Active Cleanup period and beyond.

Ecological Resources

Current

This area is completely disturbed with buildings, parking areas, and cleared graveled areas. Migratory birds could nest on buildings. Work would be done when birds are not nesting, or other mitigation activities would be implemented.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Removal of facility would include significant truck traffic/roadway disturbance to level 3 and above resources in buffer area (16%). Removal of facility will decrease potential nesting sites, roost sites, and raptor hunting perches. Also, remediation activities may disrupt possible occurrence of Piper's daisy recorded in current evaluations.

Cultural Resources

Current

Area is heavily disturbed and most of the EU has not been inventoried for archaeological resources. Geomorphology indicates a low potential to contain intact archaeological resources on the surface and/or subsurface. Traditional cultural places are visible from EU. National Register eligible Manhattan Project/Cold War Era buildings have been mitigated.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Archaeological investigations and monitoring may need to occur prior to remediation. Based on geomorphological indicators, there is a low 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 demolition, remediation and entombment. National Register eligible Manhattan Project/Cold War Era buildings have been mitigated.

Considerations for Timing of the Cleanup Actions

No available information that would indicate a need for immediate cleanup or a higher priority for the B Plant than the other canyon facilities awaiting final D&D. Also, completing the initial phase of D4 to where the U Plant is today (consolidation of equipment from the canyon deck into process cells and the hot pipe trench, followed by filling the process cells, hot pipe trench, piping and electrical galleries, drain header, process sewer, and ventilation tunnel and ducts with grout) would remove the greatest

[12] Because of the tendency for Sr-90 and uranium to sorb to Hanford sediments (and reinforced by predictions in the TC&WM EIS groundwater transport analysis (Appendix O, DOE/EIS-0391 2012), ratings for these constituents will be *Low* after the Active Cleanup period to account for uncertainties in the evaluation.

potential radiological risks to humans and possibly permit a longer delay in final cleanup. D&D of the B Plant canyons could also be delayed until the Cesium and Strontium capsules have been removed from the WESF building.

The saturated zone beneath the CP-DD-2 area currently has elevated levels of levels of nitrate and total uranium based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Waste sites within the CP-DD-2 EU are not suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0) but may be contributing contamination to the vadose zone. Monitoring of groundwater is being conducted within the 200-BP GWIA as described in Appendix D.5. Some plume areas have increased (e.g., cyanide, total uranium, and I-129 in 200-BP) and concentrations continue to exceed cleanup levels for many primary contaminants. Thus cleanup actions are warranted for this area although no actions appear needed to address the vadose zone contamination associated with the CP-DD-2 EU.

There is potential for additional contaminant release and migration through the vadose that may subsequently impact groundwater as long 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

There is Insufficient Information (IS) with regard to human health risks because the specific method of cleanup for the B Plant complex has not been determined, and thus no Hazard Analysis or DSA describing near-term or post-cleanup risks have been prepared.

Groundwater: During the Near-term, Post-Cleanup period (described in **Parts V** and **VI** and Table F.7-7), the ratings are maintained at *Low* for all Group A and B primary contaminants with reported inventories to account for the fact that treatment options have not been defined for 200 East groundwater and to address uncertainties.

Columbia River: As indicated in **Part V**, no Group A or B primary contaminants from the 200-BP GWIA are predicted to have concentrations exceeding screening values in this evaluation period. Thus ratings will not be modified, and all ratings are *Not Discernible* (*ND*) as is the overall rating (Table F.7-7).

PART II. ADMINISTRATIVE INFORMATION

OU AND/OR TSDF DESIGNATION(S)

200-CB-1, CP-DD-2

COMMON NAME(S) FOR EU

B Plant Facilities

KEY WORDS

Canyon and processing facility

REGULATORY STATUS: (RCRA, CERCLA, ROD IN DISPOSITION TABLE FOR MANY)

Regulatory basis

The 1996 Agreement in Principle (DOE-RL1996) among the Tri-Parties of DOE, USEPA, and Washington State Department of Ecology established that the CERCLA Remedial Investigation/Feasibility Study process would be followed, on a case-by-case basis, to evaluate potential cleanup remedies and identify preferred alternatives for the final end state for the five major canyon buildings in the 200 Area of the Hanford Site.

Applicable regulatory documentation

Applicable Consent Decree or TPA milestones

M-085-01: Submit a change package to establish a date for major milestone M-085-00 in accordance with schedules established in approved RD/RA work plans. Due date June 30, 2026

*M-085-70***:** Submit to Ecology a Remedial Investigation/Feasibility Study Work Plan for 200-CB-1 (B Plant). Due date September 30, 2019

*M-085-72***:** Submit to Ecology a Removal Action Work Plan to implement the approved Action Memorandum for 224-B (DOE/RL 2004-36). Due date September 30, 2020

*M-085-74***:** Submit to Ecology for approval proposal(s) for expedited response action(s) for one or more of the Tier 1 and Tier 2 facilities in the B Plant Geographic Area listed in HFFACO Appendix J.

A Remedial/Removal Action Work Plan including schedule shall be submitted to Ecology as a primary document 180 days after approval of the Action Memorandum or interim Record of Decision developed for the expedited response action or an alternative period designated in the Action Memorandum or interim Record of Decision. Due date June 30, 2018

*M-085-76***:** Initiate response actions for the B Plant Geographic Area in accordance with the schedule in the approved Remedial/Removal Action Work Plan developed under M-085-74. Due date September 30, 2025

RISK REVIEW EVALUATION INFORMATION

Completed

August 26, 2016, updated February 17, 2017

Evaluated by

Henry Mayer, Amoret Bunn, Jennifer Salisbury and K.G. Brown

Ratings/Impacts Reviewed by

David Kosson and James Clarke

PART III. SUMMARY DESCRIPTION

CURRENT LAND USE

Industrial

DESIGNATED FUTURE LAND USE

Pursuant to the 1999 Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS), the Central Plateau (200 Areas) geographic area is designated as Industrial-Exclusive (an area suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, nonradioactive wastes, and related activities).

PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

This EU includes two Unplanned Release areas, UPR-200-E-27 and UPR-200-E-28. The first occurred on November 1, 1960, during work in the 244-CR Vault, when winds spread contaminated particles eastward. Contamination levels around the vault, inside the fence, ranged between 50 and 100 millirads/hour. Particles reading as high as 40,000 counts per minute were found outside the fence. The second release occurred inside the 221-B building. The waste was approximately 80,000 to 230,000 gallons of steam condensate contaminated with Cs-137 and Sr-90 that leaked through the expansion joint between cells 38 and 39 of the B Plant Canyon Building directly into the soil column.

High-Level Waste Tanks and Ancillary Equipment

Not applicable

Groundwater Plumes

The saturated zone beneath the CP-DD-2 area currently has elevated levels of nitrate and total uranium based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). The 200 East Area plumes are described in detail in the CP-GW-1 EU (Appendix D.5). No waste sites within the CP-DD-2 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0) and no plumes have been linked to CP-DD-2 sources (DOE/RL-2016-09, Rev. 0). Monitoring of groundwater is being conducted within the 200-BP GWIA, which is described as part of the CP-GW-1 EU (Appendix D.5).

Operating Facilities

Not applicable

D&D of Inactive Facilities

The B Plant facility was constructed in 1945 in the 200 East Area of the Hanford Site. The 221-B Canyon Building was designed to chemically process spent nuclear fuel using the bismuth-phosphate process. The process solutions were transferred by underground pipe from the 221-B Canyon Building a short distance south to the 224-B Building process cells for purification and plutonium concentration. The facility B Plant began separations processing using actual irradiated uranium feed from Hanford's B and D Reactors on April 13, 1945. The original separations process used at B Plant produced a plutonium nitrate product that was shipped to Los Alamos, New Mexico, for fabrication into atomic weapons.

Plutonium concentration operations were performed in the 224-B Building in conjunction with B Plant separations activities from approximately 1944 to 1952. The facility's process components were deactivated shortly thereafter.

In the early 1960s, the decision was made to retrofit B Plant for a large waste-partitioning mission to separate strontium-90 (90Sr) and cesium-137 (137Cs) from high-level wastes already stored in Tank Farms associated with the Plutonium-Uranium Extraction (PUREX) and Reduction-Oxidation (REDOX)

Plants, as well as PUREX acid wastes and sludge. The canyon and process cells were extensively decontaminated of residual plutonium when B Plant was prepared for the cesium separations mission. Some plutonium may remain in the air tunnel, the underground ducts, and other portions of the canyon and old ventilation system; however, the only known or estimated remaining plutonium is in the old ventilation system filters. During the separations mission, individual strontium and cesium solutions were transferred to WESF for processing, encapsulation, and storage in pool cells. B Plant supported WESF by providing utility support (e.g., water, chemical supplies) and effluent discharge storage and transfer to the Hanford Tank Farms.

B Plant entered a cleanout and stabilization program in 1992, was declared an inactive surplus facility, and entered a deactivation program in 1995 prior to being declared as deactivated in 1998. In 1995, DOE formally declared B Plant an excess facility. From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. Deactivating B Plant involved eliminating the WESF operations' reliance on B Plant, minimizing the hazards at B Plant by removing the majority of residual process products, isolating the remaining hazards, and shutting down all B Plant processes.

The construction of WESF physically adjacent to the 221-B Canyon started in 1971 and was completed in 1973. Cesium processing was shut down in October 1983 and strontium processing was shut down in January 1985. Final overall process shutdown was accomplished in September 1985. Shutdown for the cesium and strontium processes involved equipment cleanout, equipment isolation or removal, jumper removal, nozzle blanking, window refurbishment, and instrumentation deactivation for the hot cells. Only equipment and instruments that were required for cell maintenance and surveillance remained operational in the hot cells. The water sources to A through F Cells have been isolated and the manipulators were removed from A through E Cells. WESF continues to store the Hanford Site's inventory of cesium and strontium capsules in the pool cells. The current WESF mission is currently limited to facility maintenance activities; inspection, decontamination, and movement of capsules; and storage and surveillance of capsules.

LOCATION AND LAYOUT MAPS

The B Plant Facility is located in the northwest quadrant of the Hanford site 200 East Area and is adjacent to the Waste Encapsulation and Storage Facility (WESF [225-B Building]). Highway 240 is located 5.13 miles southwest of the B Plant complex and the Columbia River is 7.04 miles to the north-northwest. The distance to the nearest Hanford Site boundary is 10.33 miles to the southwest.

Source of Figure F.7-1: http://fas.org/irp/imint/doe_hanford_b_01.htm

Figure F.7-1. B Plant Evaluation Unit Location (with WESF)

Figure F.7-2. B Plant Facility: Primary Buildings Identified

PART IV. UNIT DESCRIPTION AND HISTORY

EU FORMER/CURRENT USE(S)

The B Plant facility was constructed in 1945 and designed to chemically process spent nuclear fuel using the bismuth-phosphate process. B Plant began separations processing using actual irradiated uranium feed from Hanford's B and D Reactors on April 13, 1945. The process solutions were transferred by underground pipe from the 221-B Canyon Building a short distance south to the 224-B Building process cells for purification and plutonium concentration. The original separations process used at B Plant produced a plutonium nitrate product that was shipped to Los Alamos, New Mexico, for fabrication into atomic weapons. In 1952, due to the greater efficiency of a new radiochemical separations process at Hanford known as reduction-oxidation, B Plant closed as a plutonium separations facility.

In the early 1960s, the decision was made to retrofit B Plant for a large waste-partitioning mission to separate strontium-90 (90Sr) and cesium-137 (137Cs) from high-level wastes already stored in Tank Farms associated with the Plutonium-Uranium Extraction (PUREX) and Reduction-Oxidation (REDOX) Plants, as well as PUREX acid wastes and sludge. During the separations mission, individual strontium and cesium solutions were transferred to WESF for processing, encapsulation, and storage in pool cells.

B Plant entered a cleanout and stabilization program in 1992, was declared an inactive surplus facility, and entered a deactivation program in 1995 prior to being declared as deactivated in 1998. In 1995, DOE formally declared B Plant an excess facility. From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. Deactivating B Plant involved eliminating the WESF operations' reliance on B Plant, minimizing the hazards at B Plant by removing the majority of residual process products, isolating the remaining hazards, and shutting down all B Plant processes.

There are currently no operating processes at B Plant since it is deactivated. During the current facility life-cycle stage, planned facility activities will consist primarily of S&M and storage of incidental goods and supplies required for S&M activities of B Plant.

Located adjacent to B Plant in the 200E Area of the Hanford Site, WESF is designed to ship, inspect, decontaminate, and store strontium and cesium capsules that were produced in past campaigns at WESF with the B Plant. The capsules were produced in WESF from 1974 to 1985 to reduce the quantity of Sr-90 and Cs-137 in liquid waste in underground tanks. The Sr-90, in the form of strontium fluoride, and the Cs-137, in the form of cesium chloride, were doubly encapsulated in WESF hot cells and then stored underwater in WESF pool cells. Current WESF operations consist of safely storing the cesium and strontium capsules within a series of interconnected pools within the WESF building. The current scope of the WESF mission is limited to facility maintenance activities: inspection, decontamination, and movement of capsules; and storage and surveillance of capsules.

LEGACY SOURCE SITES

Not applicable, see B Plant Cribs & Trenches EU (CP-LS-8)

GROUNDWATER PLUMES

The saturated zone beneath the CP-LS-12 area currently has elevated levels of nitrate and total uranium based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Plumes in the 200-BP GWIA are described in CP-GW-1 EU (Appendix D.5). No CP-DD-2 waste sites with reported inventories (Table F.7-2 through Table F.7-4) are suspected of being able to contribute mobile

contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). Monitoring of groundwater is being conducted within the 200-BP GWIA.

D&D OF INACTIVE FACILITIES

The B Plant Evaluation Unit includes multiple deactivated buildings and waste sites (see Figure F.7-1). Those with the largest amounts of radiological inventory are described below (see Figure F.7-2 for locations).

221-B Canyon Building

The 221-B Canyon Building, shown in Figure F.7-3 was constructed in 1945 and designed to chemically process spent nuclear fuel using the bismuth-phosphate process. It is a reinforced-concrete and steel structure, 811.5 ft long and 77.2 ft high overall, with partial embedments of 22.5 ft and 16 ft on the south and north sides. The cross-sectional width of 66.2 ft is constant to a height of 59.8 ft, and then increases to a maximum of 68.2 ft at the roof top. The roof slab varies in thickness from 3 ft at midspan to 4 ft at the edges where it is supported by the exterior walls. A new roof was recently placed over the existing roof for the building. The new roof is a steel structure that is enclosed with metal panels and shaped as a sloped shed, built over and enclosing the existing roof, and supported by the facility structure. The roof is designed to provide minimal maintenance and a slope that will drain run-off from the canyon structure. The building is supported on a 6 ft thick concrete slab.

The canyon is comprised of 40 cells, a hot pipe trench, an air tunnel, a crane cab gallery, service area, and the operating, pipe, and electrical galleries. The cells and the hot pipe trench are covered with removable concrete blocks. A 41 metric ton (45 ton) capacity overhead bridge crane spans the total internal width of the building. In 1998, a surveillance lighting system was installed in the electrical and pipe galleries and in stairwells #1, #3, #11, #13, and #19, and a liquid-level detection system was installed in TK-10-1 in Cell 10.

The third floor contained offices, the chemical makeup head tanks, space for dry and wet chemical storage, the continuous deionization unit, and the canyon backup-lighting, uninterruptible power supply system. The batteries for the power supply system have been removed. No chemicals are stored in the facility. Some of the tanks contain minimum heels.

In the early 1960s, the decision was made to retrofit B Plant for a large waste-partitioning mission to separate strontium-90 (90Sr) and cesium-137 (137Cs) from high-level wastes already stored in Tank Farms associated with the Plutonium-Uranium Extraction (PUREX) and Reduction-Oxidation (REDOX) Plants, as well as PUREX acid wastes and sludge. The canyon and process cells were extensively decontaminated of residual plutonium when B Plant was prepared for the cesium separations mission. During the separations mission, individual strontium and cesium solutions were transferred to WESF for processing, encapsulation, and storage in pool cells.

B Plant entered a cleanout and stabilization program in 1992, was declared an inactive surplus facility, and entered a deactivation program in 1995 prior to being declared as deactivated in 1998. In 1995, DOE formally declared B Plant an excess facility. From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. With the exception of the ACT ventilation system, all of the old operating systems in B Plant have been deactivated (e.g., shut down, deenergized of electrical power, abandoned in place). Equipment that could contain solutions has been drained or pumped empty as much as possible using the existing equipment configuration. The majority of hazardous material consists of fairly adherent radioactive films and residues in deactivated equipment and structures. Deactivating B Plant also involved eliminating the WESF operations' reliance on B Plant,

minimizing the hazards at B Plant by removing the majority of residual process products, isolating the remaining hazards, and shutting down all B Plant processes.

Tank TK-10-1 (located in Cell 10) served as a collection tank for liquids that leaked into the cells and air tunnel during past missions. The tank is being used to collect any liquids that may exist in the cells and air tunnel during the S&M phase. Drains from all the cells are connected to a common drain header that is routed to Cell 10. Tank TK-10-1 is the lowest tank in the canyon building. TK-10-1 has a 38-kL (10,000 gal) capacity. The liquid-level monitoring system monitors the liquid level in TK-10-1. A concrete plug provides a small access port into the Cell 10 cover block. The port is provided to allow for future installation of a submersible sump pump in the event liquids accumulate and need to be pumped out of TK-10-1.

The tank was emptied to minimum heel. It is anticipated that there may be small discharges to TK-10-1 from pipes due to residual liquids left in pipes. There may be discharges to the tank if water leaks into the canyon from rain or snowmelt. Infiltration from extreme snowmelt was observed in 1998 to significantly impact the tank's liquid levels; however, the roof installed in 2002 is designed to reduce or preclude this infiltration path. No detectable liquid accumulation in TK-10-1 has occurred since the facility was deactivated in September 1998.

291-B Air Filters and Filter Vaults

An air tunnel is located under the 221-B canyon deck, below the hot pipe trench. The exhaust duct is a concrete, rectangular duct that extends underground perpendicularly about 194.5 ft from the air tunnel, south from the canyon building to the 291-B Area. The 291-B Area contains underground concrete exhaust ducts, underground filters concrete vault, filter instrument buildings, sand filter concrete structure, fans, and the stack. The canyon and process cells were extensively decontaminated of residual plutonium when the facility was being prepared for the cesium separations. Negligible plutonium remains in the air tunnel, the underground ducts, and other portions of the canyon and ventilation system. However, relatively small quantities of plutonium remain in the ventilation system filters.

The retired 291-B HEPA filters are located in underground vaults in the 291-B area, which is located approximately 150 to 200 ft south of the east end of the 221-B Canyon Building. The vaults are reinforced concrete, with steel filter frames inside. The vaults are covered by approximately 3.1 ft of soil and gravel and are bermed with soil and gravel on three sides. The east end has a vacant vault (F vault) east of and adjacent to the last in-service filter (E filter). The A, B, C, D, and E filters were equipped with multiple banks of HEPA filters, and some filters were also equipped with one or more banks of pre-filters. The filters and vaults have been isolated and abandoned in place.

The sand filter is located 171 ft south and 62 ft west of the east end of the 221-B Canyon Building. The filter is connected to the canyon with above-grade, 5 ft wide by 6 ft deep stainless-steel ducts, 18 ft long. The filter is 110 ft long, 55 ft wide, and 21 ft high, except at the west end where it is 26.5 ft high. The filter is a reinforced-concrete structure with a floor slab that is 12 in. thick, at an elevation of 4 ft below grade. The sand filter is designated WIDS Code 200-E-30[13].

The sand filter roof consists of 60 pre-cast concrete slabs, 7 in thick, 16.7 ft long, and 4.9 ft wide, covered by a waterproofing membrane composed of layers of asphalt and fabric. The roof is supported by 12 in thick concrete walls and by 12 in by 18 in pre-cast concrete beams, upheld by two rows of 12.25

[13] CH2MHill Plateau Remediation Company, *Hanford Site Waste Management Units Report*, DOE/RL-88-30, Revision 25, prepared for the U.S. Department of Energy Assistant Secretary of Environmental Management U.S. Department of Energy, February 2016

in by 12.25 in reinforced-concrete columns, spaced 10 ft apart. The floor has 7.8 in by 11.8 in by 16 in hollow concrete blocks laid longitudinally and separated by 0.04 in wood dowels for distributing the incoming air.

The sand filter is a deep bed of rock, gravel, and sand, constructed in layers, graded with about 2 to 1 variation in granule size from layer to layer. Air flow direction is upward, and granules decrease in size in the direction of the air flow. It has been isolated and deactivated by disabling a 48 in sand filter inlet duct motor-operated valve in the closed position, and by installing a pancake flange in the sand filter outlet duct directly downstream from the deactivated outlet water seal tank, which is now empty.

224-B Building

The 224-B Building is a deactivated plutonium concentration facility. Process solutions were transferred from the 221-B Canyon Building to the 224-B process cells for purification and plutonium concentration. Plutonium concentration operations were performed in conjunction with B Plant separations activities from approximately 1944 to 1952. The building's process components were deactivated shortly thereafter.

This smaller canyon building is located next to the 221-B canyon building, and is approximately 40 ft tall and constructed of reinforced concrete and concrete block. The first and second floors have approximate outside dimensions of 197 ft by 60 ft; the third floor is 145.5 ft by 60 ft. The outer walls that surround process cells A through E are 1-ft thick concrete. The building is divided into two main sections (along its length) by a 1-ft thick concrete wall. Offices, galleries, and F cell are located on one side of the dividing wall and processing cells A through E are located on the other side.

The 224-B Building contains six process cells and an associated operating gallery, offices, and support areas (see Figure F.7-4). C cell received product solutions from the 221-B Canyon Building as well as wastes from the 224-B Building. Chemical processing of the crude product was performed in cells A, D, and E. B cell was initially a standby cell but was also used to augment operations in D cell. F cell was the final concentration area. At one time, there were plans to convert the west half of F cell into a process area designated as G cell; however, this modification was never implemented.

The process cells are identified as cells A through E (F cell is described below) and are located in the processing portion of the building. The process vessels (and the process cells) serve to provide a measure of confinement for the radioactive inventory. Five of the cells (A through E) are three-stories high (40 ft) and are separated from each other by 15 ft high, 8-in. thick concrete walls. The dimension of each cell is approximately 25 ft by 28 ft. Four of these cells (A, B, D, and E) are similar in equipment and configuration. The first floor of each cell contains two 9 ft diameter by 9 ft tall tanks and one 4.5 ft diameter by 7 ft tall tank. The B cell has an additional 4.5 ft diameter by 7 ft tall tank. Some of the tanks are equipped with deactivated agitators. Cells A, B, D, and E also have a 10 ft by 12 ft operating deck/platform at the second-floor level. Access to the decks is through the vestibules in the second-floor pipe gallery. A 40-in. centrifuge is located on each of the operating decks.

C cell differs from the other cells in both structure and arrangement. Approximately half of the cell has a floor that is 19 ft below the first-floor level. Vessels in the deep cell include two 4.5 ft diameter by 7 ft tall tanks and one 9 ft diameter by 9 ft high tank. A 5.5 ft by 11 ft high pipe tunnel extends 34 ft from the deep cell beneath the first-floor offices to a pipe encasement. The piping in this tunnel and the encasement were used for transferring solutions between 221-B and 224-B Buildings. This piping has been somewhat closed off, but is still used as a pipe chase. Water and/or air flow are still expected to be possible. A single, 9 ft diameter by 9 ft high tank is on the first-floor level of C cell.

The 50.5 ft by 25 ft by 24 ft high F cell is separated from the other cells by a concrete wall. Only process and waste piping interconnect F cell with the other cells. One-quarter of F cell is a 12.67 ft by 25 ft centrifuge deck that is elevated 7 ft above the remainder of the cell floor. Doors enter F cell from the loadout area, the outside, and from the second-floor operating gallery. Two 26-in. centrifuges are located on the elevated operating deck of F cell. The first-floor level contains four vessels with dimensions of 4 ft diameter by 5 ft high. Additional equipment includes a small centrifuge that is 12 in. in diameter and two small vessels 1.5 ft diameter by 2 ft high. A scale and agitator motor from elsewhere in the building are being stored in F cell.

WESF Building

WESF consists of the 225-B Building and several support buildings and systems (see Figure F.7-5). The 225-B Building is a two-story structure 48 m (157 ft) long by 30 m (97 ft) wide by 12 m (40 ft) high at the outside dimensions. The first floor is 1300 m2 (14,000 ft^2) and the second floor is 560 m^2 (6,000 ft^2). The ground elevation at this facility is approximately 213 m (700 ft) above sea level and is approximately 61 m (200 ft) above the underground water table[14]. The plan view of the first floor is shown below (Figure F.7-3). It is important to note that the K3 ventilation ducts are subgrade and are located under the hot cells and will be grouted in place as part of the near-term phase for WESF.

The construction of WESF started in 1971 and was completed in 1973. Cesium processing was shut down in October 1983 and strontium processing was shut down in January 1985. Final overall process shutdown was accomplished in September 1985. Shutdown for the cesium and strontium processes involved equipment cleanout, equipment isolation or removal, jumper removal, nozzle blanking, window refurbishment, and instrumentation deactivation for the hot cells. Only equipment and instruments that were required for cell maintenance and surveillance remained operational in the hot cells.

DOE plans to upgrade the ventilation system and stabilize the residual (legacy) contamination in WESF's hot cells A through F, the below grade K3 ventilation system ductwork, and the K3 filter housings in the near future. Stabilization by grouting of the majority of the hot cells will be performed by grouting in place all waste and remaining equipment and is intended to minimize the potential for the spread of contamination from the hot cells without impacting any existing facility processes (i.e., hot cells being stabilized are inactive). The long-term, tentative plan is to remove the Cs and Sr capsules from the pools by packaging the capsules into dry storage overpacks and storing them on the Hanford Site.

D&D of B Plant Complex

No specific plans have been developed for the D&D of the 221-B canyon, 224-B canyon, WESF or other buildings making up the B Plant EU.

[14] [DOE/RL-2013-18 (Rev0), pg. 1.4]

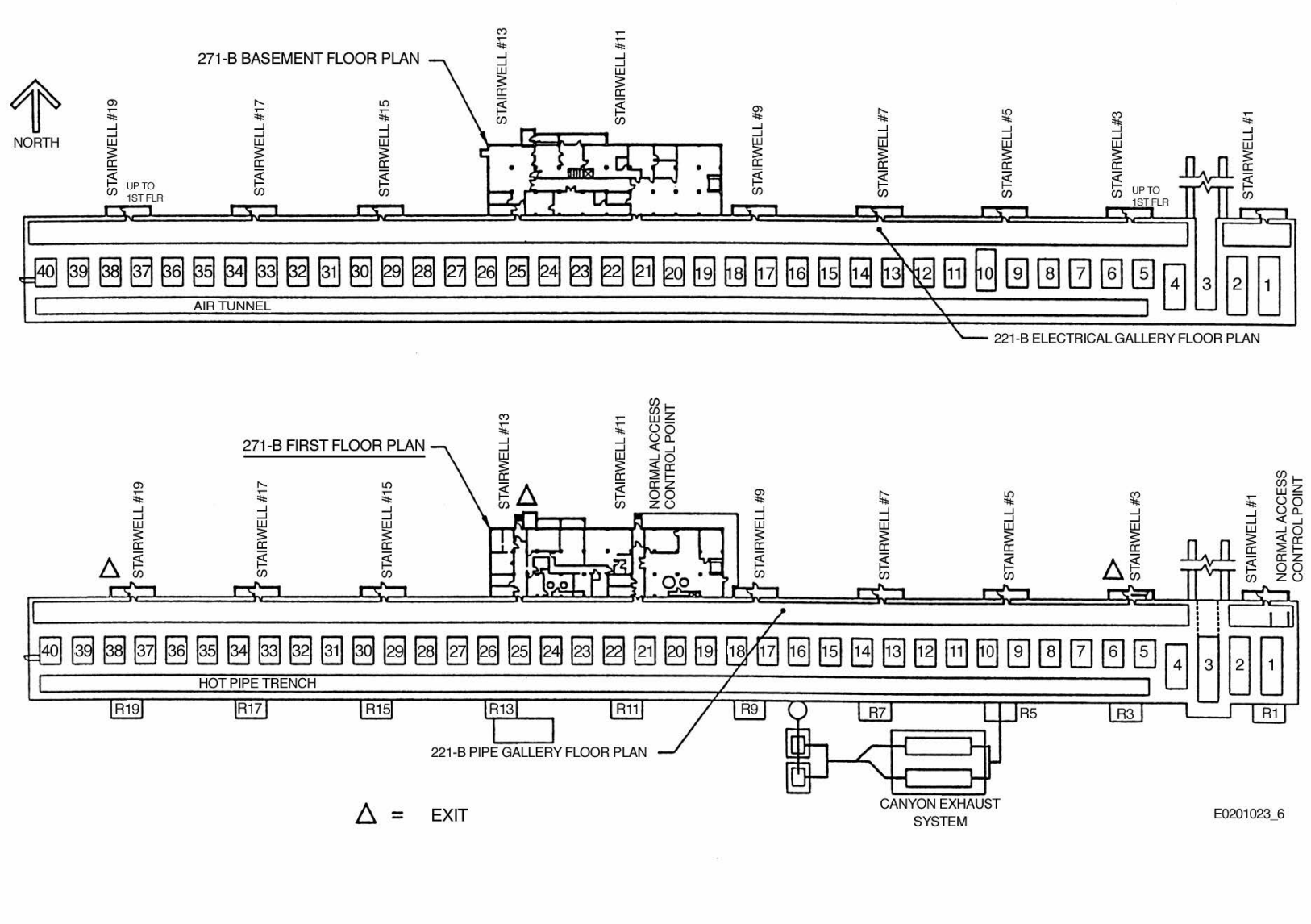


Figure F.7-3. Buildings 221-B and 271-B Basement and First Floor Plans

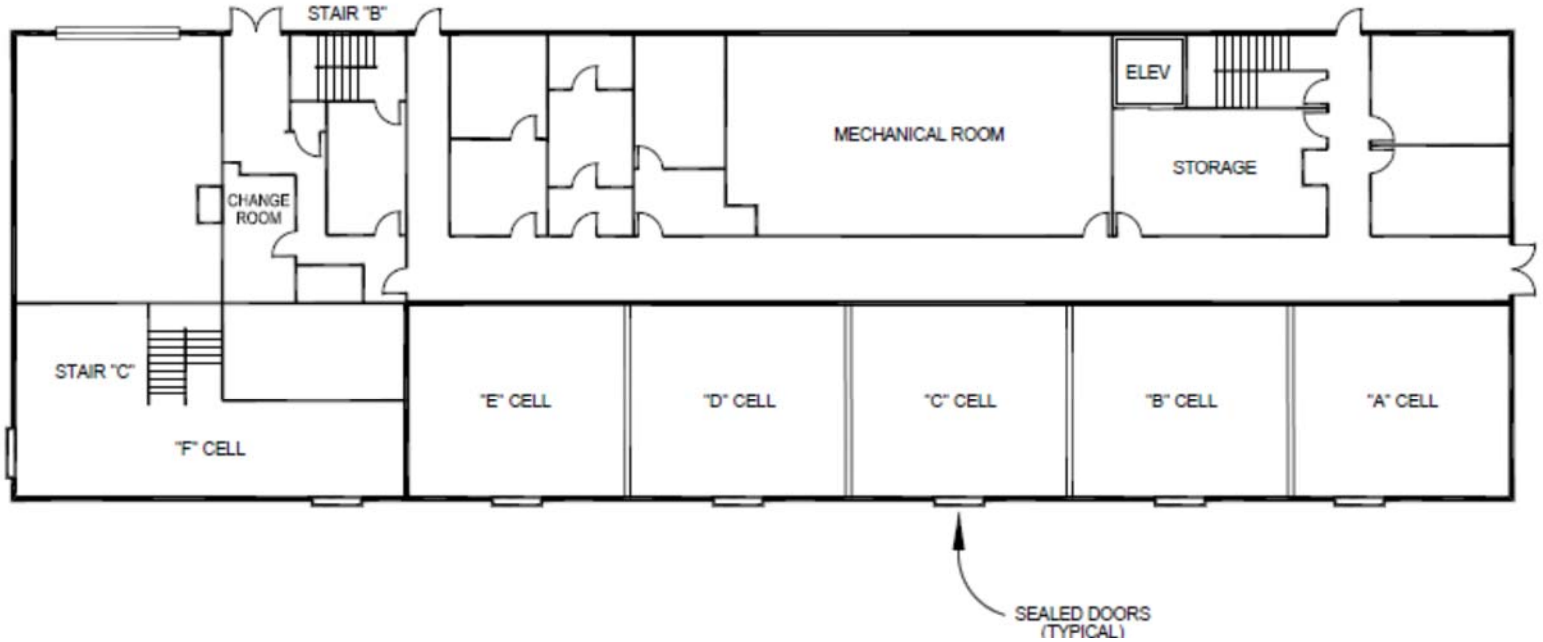
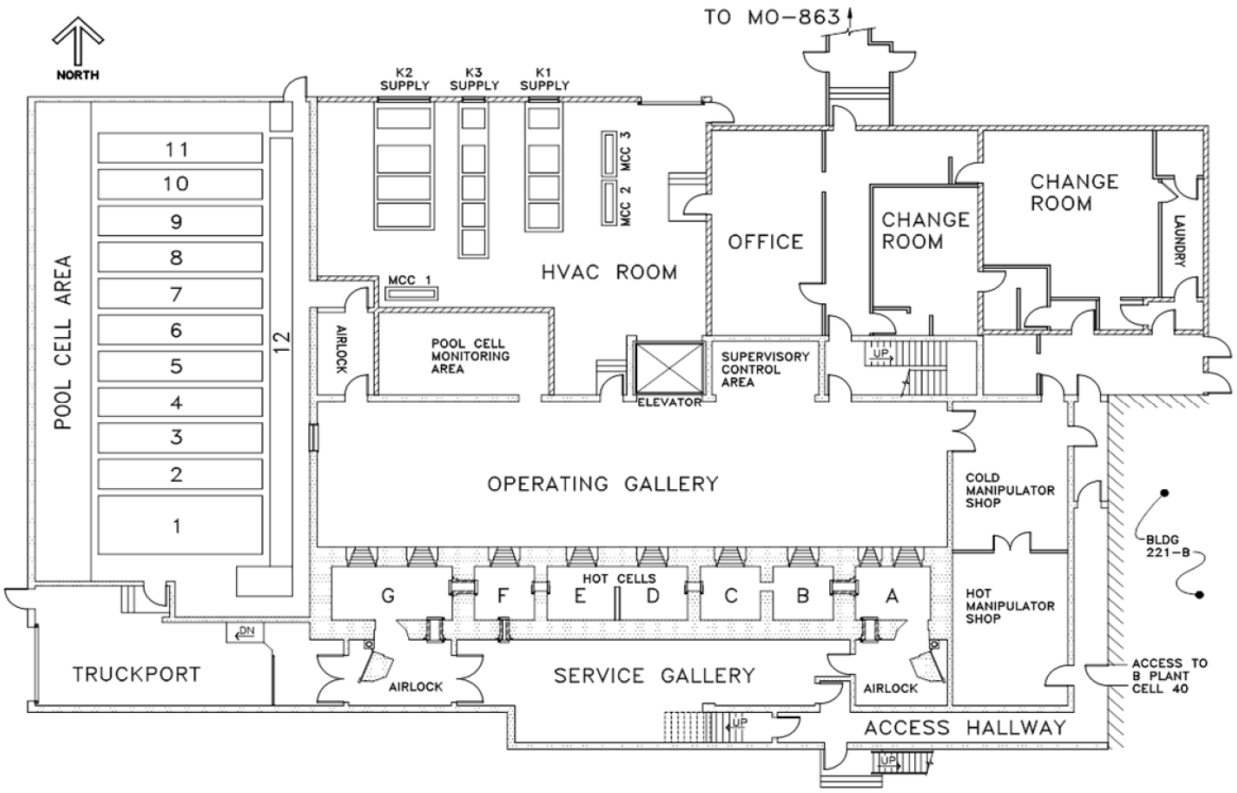


Figure F.7-4. Building 224-B First Floor Layout



Notes: MO = mobile office

Figure F.7-5. WESF Pool and Process Cells Building Layout (1st Floor)

ECOLOGICAL RESOURCES SETTING

Landscape Evaluation and Resource Classification

Although the buildings, equipment, and utility poles within the EU offer some habitat for birds, 100% of the B Plant EU is classified as 0 (Appendix J, Figure J.73).

The adjacent landscape buffer extends radially 1315 ft (401 m) from the geometric center of the EU (Appendix J, Figure J.86). Much of the buffer area is encompassed by the B Plant Cribs and Trenches EU, and survey data for that EU is discussed in that section of this report. Nearly 58% of the combined B Plant EU and adjacent buffer area is classified as levels 0 and 1, and another 28% is classified as resource level 2 (Appendix J, Table J.73). Approximately 14% of the combined area contains habitat classified as level 3. Level 3 resources to the northwest of B Plant contain mature sagebrush; scattered circular patches of level 3 resources indicate previous locations for Piper's daisy (*Erigeron piperianus*), a Washington state sensitive species. There is no habitat classified as level 4 or 5 in the adjacent landscape buffer area.

Field Survey

Other than a small lawn with a few trees near the B Plant entrance, no vegetation was observed within the B Plant EU boundary (Appendix J, Table J.73, Figure J.86). The EU comprises the canyon building and outlying buildings surrounded by graveled surfaces which are sprayed with herbicides to prevent vegetation growth. Killdeer (*Charadrius vociferous*) and house finches (*Carpodacus mexicanus*) were observed around the buildings and cliff swallows (*Hirundo pyrrhonota*) were nesting on a gantry on the

west end of the EU. The field data records at the end of this section provide lists of species observed in the EU.

CULTURAL RESOURCES SETTING

Much of the CP-DD-2 B Plant EU has not been inventoried for archaeological resources and it is not known if an NHPA Section 106 review has not been completed for remediation of the CP-DD-2 B Plant EU. One small archaeological survey was completed for a portion of the EU with negative findings. It is unlikely that intact archaeological material is present in the areas that have not been inventoried for archaeological resources (both on the surface and in the subsurface), because the soils in the EU are extensively disturbed.

Cultural resources known to be recorded within the CP-DD-2 B Plant EU are limited to: three National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District, with documentation required; and nine National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District, with no documentation required. All National-Register-eligible Manhattan Project and Cold War Era buildings have been documented as described in the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE/RL-97-56) (DOE-RL 1998).

PART V. WASTE AND CONTAMINATION INVENTORY

CONTAMINATION WITHIN PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

Not applicable, see B Plant Cribs & Trenches EU (CP-LS-8)

Vadose Zone Contamination

The CP-DD-2 waste sites with reported inventories (Table F.7-2 through Table F.7-4) consist of ancillary equipment (sand filter), three buildings, and two unplanned releases (UPRs) that represent vadose zone and other contamination. Contamination within the sand filter and three buildings is considered isolated from the vadose zone and thus this inventory is not associated with the vadose zone. The UPR inventories thus represent the reported contamination originally discharged (without decay correction[15]) to the vadose zone from the CP-DD-2 waste sites. These values are used to estimate the inventory remaining in the vadose zone using the process described in the Methodology Report (CRESP 2015) 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 2015) in the vadose zone due to their mobility and persistence and

[15] As described in the Methodology Report (CRESP 2015) 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 2015).

potential threats to groundwater (a protected resource); however, no plumes have been associated with CP-LS-14 waste sites. To summarize[16]:

- *Chromium* – There is only a reported inventory in UPR-200-E-87 for chromium (Table F.7-4) but none of the current plumes in 200 East are associated with CP-DD-2 sources.
- *Carbon tetrachloride* (CCl_4), *cyanide* (CN), and *trichloroethene* (TCE) – There are no reported vadose zone inventories in the CP-LS-12 waste sites (Table F.7-4).
- *I-129 and Tc-99* – There are very small reported inventories in UPR-200-E-87 (Table F.7-2 and Table F.7-3) that are not related to current plumes.
- *Uranium* – There are small reported inventories in each UPR (Table F.7-3 and Table F.7-4) that are not linked to current plumes.
- *Sr-90 and other Group A&B Primary Contaminants (PCs)* – There are small reported vadose zone inventories for Sr-90 (Table F.7-3) in the two UPRs and C-14 (Table F.7-2) in UPR-200-E-87 but none for Cl-36 (Table F.7-2).

No CP-DD-2 waste sites have been linked to existing plumes in the Hanford Central Plateau (DOE-RL/2016-09, Rev. 0). Because of the tendency of uranium and Sr-90 to sorb to Hanford vadose zone media and that the TC&WM EIS groundwater transport analysis at the B Barrier[17] (see Section 7.5 in Appendix E.7) indicates that neither Sr-90 or uranium are expected to migrate appreciably in the area (Appendix O, DOE/EIS-0391 2012), these primary contaminants (both with reported inventories) are given *Not Discernible* (*ND*) current ratings and *Low* ratings after the Active Cleanup period to address uncertainties in the evaluation. For the other Group A and B constituents, the TC&WM EIS groundwater transport analysis indicates that predicted peak concentrations at the B Barrier for several constituents could exceed thresholds during the evaluation period; however, sources for the plumes for these contaminants are not part of CP-DD-2, inventories are very small, and thus any contributions from CP-DD-2 in the future would be assumed to be subsumed in the exiting plumes. The ratings for these are thus not changed based on this analysis.

Using the process outlined in Chapter 6 of the Methodology Report (CRESP 2015) 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 for CP-DD-2 in Table F.7-6 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. The vadose zone (VZ) ratings range are *Low* for most other primary contaminants where ratings for Sr-90 and total uranium are described above. The overall current rating is defined as the highest over all the ratings and thus *Low*.

Groundwater Plumes

No sites within the CP-DD-2 EU with reported inventories are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). Monitoring of groundwater is being

[16] 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.

[17] 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 B Barrier is the closest to CP-DD-2. Despite including sources other than those for CP-DD-2, the analysis in the TC&WM EIS was considered a reasonable source of information to assess the potential transport in the Hanford subsurface.

conducted within the 200-BP GWIA as described in CP-GW-1 EU (Appendix D.5). As shown in Table F.7-6, no saturated zone inventories have been associated with CP-DD-2; the process for deriving these inventories is described in CRESP Methodology Report (CRESP 2015) 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); furthermore, as described in the previous sections, no portions of the groundwater plumes are associated with CP-DD-2 (DOE/RL-2016-09, Rev. 0). Note that Sr-90 (High) is the primary risk driver for the 200-BP GWIA; however, there are no CP-DD-2 sources associated with these plumes, and the remaining vadose zone sources from other EUs would drive future risks to groundwater.

Impact of Recharge Rate and Radioactive Decay on Groundwater Ratings

As described in Section 7.5 of Appendix E.7 for the B-BX-BY Tank and Waste Farms (CP-TF-6), the TC&WM EIS screening groundwater transport analysis (Appendix O, DOE/EIS-0391 2012) indicates that there may be a significant impact from emplacing an engineered surface barrier (and resulting reduction of infiltrating water) on the predicted peak groundwater concentrations (relative to thresholds), which is assumed representative of impacts in the CP-DD-2 area. However, some concentrations are predicted to exceed thresholds during the evaluation period; this result is likely due to the significant amounts of contaminants already in the groundwater including from sources including other than CP-DD-2 (because these inventories are very small) and not due to an ineffective surface barrier.

From the screening groundwater transport analysis, an appreciable uranium or Sr-90 plume is not expected in the next 150 years due to retardation in the vadose zone as well as radioactive decay for Sr-90 (+97% reduction in inventory where the current rating is also *Low*). Thus Sr-90 (or total uranium) is not considered a significant threat to the Hanford groundwater but remains a threat to the vadose zone or groundwater if conditions change significantly.

Since the predicted peak concentrations are predicted to remain above thresholds for some primary contaminants (e.g., Tc-99, I-129, and chromium) even after surface barrier emplacement, it is decided to not alter the CP-DD-2 ratings related to groundwater based on different recharge rate scenarios. This effect is likely not due to an ineffective surface barrier but instead the amount of these contaminants already in the groundwater and contributions of sources outside CP-DD-2 (as assumed in the TC&WM EIS analysis). Furthermore, groundwater is not yet being treated in the area and thus there is no basis yet for changing ratings for CP-DD-2.

Columbia River

Threats to the Columbia River similar to those presented by the CP-DD-2 EU were evaluated in Section 7.5 of Appendix E.7 (B-BX-BY Tank and Waste Farms) where all risks and potential impacts were rated *Not Discernible* (*ND*).

Facilities for D&D

The B Plant has been categorized as a hazard category 2 nuclear facility. The primary contaminants are large inventories of Cs-137 and Sr-90 in the 221-B Canyon and A-D Filters (see Table 5). The canyon and process cells were extensively decontaminated of residual plutonium when B Plant was prepared for the cesium separations mission in the 1960s. Some plutonium may remain in the air tunnel, the

underground ducts, and other portions of the canyon and old ventilation system; however, the only known or estimated remaining plutonium is in the old ventilation system filters. [18]

In addition, small quantities of Pu-238 to 242 and Am-241 are present in the 224-B deactivated plutonium concentration building (estimated total of 132 Curies decayed to 2008 values). [19] Underground pipes are also believed to be contaminated, including the pipes between the 212-B and 224-B Buildings however the levels of contamination in these pipes are unknown.

From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. With the exception of the ACT ventilation system, all of the old operating systems in B Plant were deactivated (e.g., shut down, de-energized of electrical power, and abandoned in place). Equipment that could contain solutions was drained or pumped empty as much as possible using the existing equipment configuration. Liquid chemical inventories were removed and the significant quantity of dry chemical that remains in the canyon is stable, dry tri-sodium phosphate. Small amounts of materials may remain as dried heels in tanks but this material is not expected to be released in accident scenarios. The majority of hazardous material consists of fairly adherent radioactive films and residues in deactivated equipment and structures.

After removal of the cesium and strontium capsules currently stored in water pools in the Waste Encapsulation and Storage Facility (225-B Building) the WESF building will contain Cs-137, Sr-90, and ingrown decay products (e.g., barium 137 [Ba-137m, Ba-137] from Cs-137, yttrium-90 [Y-90] from Sr-90) residing in: 1) the hot cells, hot cell-connected ventilation ductwork, and hot cell-connected HEPA filters(combined total activity of ~300 kCi), and 2) the pool water cleaning ion exchange module [WIXM] (varying radioactivity with maximum at 56 kCi).[20]

This EU also includes a total of 118 miscellaneous waste sites and 48 active and inactive structures.

Table F.7-5 provides a breakdown of the inventories of the 221-B canyon building and other waste sites and facilities related to the canyon building. The inventory for 221-B as shown in Table F.7-2 through Table F.7-4 is equal to the sum of the A, B, C, D, E, and ACT Filters and the 221-B Canyon contamination shown in Table F.7-5. The inventory of the ACT Filters shown in Table F.7-5 is trivial in comparison to the other inventory values and is assumed included in the total for 221-B. The sand filter is designated WIDS code 200-E-30.

[18] CH2MHill Plateau Remediation Company, B Plant Documented Safety Analysis, HNF-14804, Revision 4, January 30, 2013.
[19] CH2MHill Plateau Remediation Company, 224-B Plant Documented Safety Analysis, CP-18179, Revision 7, April 10, 2013.
[20] CRESP Interim Report, Appendix H.4, Waste Encapsulation and Storage Facility (WESF) (CP-OP-3, Central Plateau), Evaluation Unit Summary Template.

Table F.7-2. 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			11	1.00E-05	NR	4.90E-06	240,000	4.00E-06	0.00038	4.60E-09	4.10E-10
200-E-30	Ancillary Equipment	1994	EIS-S	NR	NR	NR	NR	2,000	NR	NR	NR	NR
212-B	Infrastructure Building	1997	EIS-S	NR	NR	NR	NR	100	NR	NR	NR	NR
221-B	Process Building	1997	EIS-S	NR	NR	NR	NR	240,000	NR	NR	NR	NR
224-B	Process Building	1985	EIS-S	11	NR	NR	NR	NR	NR	NR	NR	NR
200-E-28	UPR	2001	SIM	NR	NR	NR	NR	0.0018	NR	NR	NR	NR
UPR-200-E-87	UPR	2001	SIM	0.00024	1.00E-05	NR	4.90E-06	0.0019	4.00E-06	0.00038	4.6E-09	4.1E-10

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0
d. See Table F.7-5 for inventory by location in Canyon facility.

Table F.7-3. 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			2.70E-06	0.00023	95	120,000	9.30E-07	5.60E-07
200-E-30	Ancillary Equipment	1994	EIS-S	NR	NR	1.9	3,000	NR	NR
212-B	Infrastructure Building	1997	EIS-S	NR	NR	NR	1,000	NR	NR
221-B	Process Building	1997	EIS-S	NR	NR	2.1	120,000	NR	NR
224-B	Process Building	1985	EIS-S	NR	NR	89	NR	NR	NR
200-E-28	UPR	2001	SIM	NR	NR	0.00027	0.015	NR	1.90E-07
UPR-200-E-87	UPR	2001	SIM	2.70E-06	0.00023	2.9	0.0017	9.30E-07	3.70E-07

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0
d. See Table F.7-5 for inventory by location in Canyon facility.

Table F.7-4. 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	28	NR	0.005	2,300	97,000	NR	NR	0.00076
200-E-30	Ancillary Equipment	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
212-B	Infrastructure Building	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
221-B	Process Building	EIS-S	NR	NR	19	NR	NR	NR	97000	NR	NR	NR
224-B	Process Building	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
200-E-28	UPR	SIM	NR	NR	NR	NR	0.005	0.53	0.0086	NR	NR	0.00022
UPR-200-E-87	UPR	SIM	NR	NR	9.4	NR	NR	2,300	NR	NR	NR	0.00054

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0

Table F.7-5. Radioactive Materials Inventory by Location

Location	Type	Inventory
A Filter	Cs-137	18,000 Ci
	Sr-90	12,000 Ci
	Pu Mixture	1 g
B Filter	Cs-137	43,000 Ci
	Sr-90	29,000 Ci
	Pu Mixture	1 g
C Filter	Cs-137	25,000 Ci
	Sr-90	16,000 Ci
	Pu Mixture	1 g
D Filter	Cs-137	70,000 Ci
	Sr-90	14,000 Ci
	Pu Mixture	1 g
E Filter	Cs-137	3 Ci
	Sr-90	2 Ci
Sand Filter	Cs-137	2,000 Ci
	Sr-90	3,000 Ci
	Pu Mixture	11 g
212-B Cask loading station	Cs-137	100 Ci
	Sr-90	1,000 Ci
221-B Canyon contamination	Cs-137	81,000 Ci
	Sr-90	44,000 Ci
	Pu Mixture	8.1 g
ACT Filters	Cs-137	9.4 Ci
	Sr-90	9.4 Ci
	Pu Mixture	9.40E-4 g
Total	Cs-137	240,000 Ci
	Sr-90	120,000 Ci
	Pu Mixture	23 g

(a) CH2MHill Plateau Remediation Company, B Plant Documented Safety Analysis, HNF-14804, Revision 4, January 30, 2013.

Table F.7-6. 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	0.25	0	1.82	1.03E-05 Ci	---	---	1.03E-05 Ci	5.14E-06	*Low*
I-129	A	1 pCi/L	0.25	0.2	1.82	4.11E-10 Ci	---	---	4.11E-10 Ci	1.67E-07	*Low*
Sr-90	B	8 pCi/L	0.25	22	1.82	1.66E-02 Ci	---	---	1.66E-02 Ci	1.28E-02	*ND*[(e)]
Tc-99	A	900 pCi/L	0.25	0	1.82	9.29E-07 Ci	---	---	9.29E-07 Ci	1.03E-06	*Low*
CCl4	A	5 µg/L	0.25	0	1.82	---	---	---	---	---	*ND*
Cr	B	100 µg/L	0.25	0	1.82	9.41E+00 kg	---	---	9.41E+00 kg	9.41E-02	*Low*
Cr-VI	A	48 µg/L[b]	0.25	0	1.82	9.41E+00 kg	---	---	9.41E+00 kg	1.96E-01	*Low*
TCE	B	5 µg/L	0.25	2	1.82	---	---	---	---	---	*ND*
U(tot)	B	30 µg/L	0.25	0.8	1.82	7.57E-04 kg	---	---	7.57E-04 kg	3.70E-06	*ND*[(e)]

a. Parameters obtained from the analysis provided in Attachment 6-1 to Methodology Report (CRESP 2015).
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 2015).
e. As discussed in **Part V**, no appreciable Sr-90 or total uranium 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?

In terms of radiological dose impact to the facility Worker and Co-located Person, the highest risks are presented by a seismic event (likely lead to total collapse of the two B Plant canyons), a roof collapse of either canyon caused by a crane drop, a fire in the 224-B building or 221-B retired filters, and during contaminated equipment removal from 224-B building.

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

Neither the 221-B or 224-B building have active safety support systems such as fire protection, radiological monitoring, building emergency alarm, or notification systems, and none are believed necessary to support current S&M activities.

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

The 221-B and 224-B building structures provide confinement of hazardous materials and shielding for worker protection during normal operations and accidents in some of the postulated scenarios, and as a result, are designated as defense-in-depth (DID) and important to safety (ITS).

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 vast majority of the total radiological B Plant inventory is located in the 221-B and 224-B canyons process cells and the deactivated 291-B filter vaults. As such, these contaminants are located below ground level and within strong concrete enclosures that prevent their release or dispersion.

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

The failure of the barrier requires a greater than design seismic event, a crane drop on a canyon building roof causing its total collapse, or as a result of specific fire scenarios identified in the DSAs.

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

Primary pathway is an airborne release that would be breathed in by a Facility Worker or Co-Located Person.

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

An unfiltered ground release would cause human exposure within seconds of the event.

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

No

POPULATIONS AND RESOURCES CURRENTLY AT RISK OR POTENTIALLY IMPACTED

Facility Worker

Only those involved in quarterly S&M activities.

Co-Located Person (CP)

Workers at WESF would be the only known CP's impacted, as no one should be present within the larger fenced-in B Plant facility.

Public

The nearest site boundary is 16,630 m (10.33 mi) to the southwest and none of the postulated accident scenarios would present any risk to the Public.

Groundwater

Table F.7-6 represents the risks and associated ratings for groundwater from remaining vadose zone contamination associated with the CP-DD-2 waste sites. Sites within the CP-DD-2 EU may have contaminated the vadose zone but no waste sites are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). The current risk and potential impact ratings for the CP-DD-2 EU Group A and B primary contaminants are *Low* (most contaminants) and *ND* (Sr-90 and total uranium) (Table F.7-6). Monitoring of groundwater is being conducted within the 200-BP GWIA as described CP-GW-1 EU (Appendix D.5). No current plumes have been linked to CP-DD-2 EU waste sites.

Columbia River

As described in Appendix D.5 (CP-GW-1 EU) and **Part V**, no plumes from CP-DD-2 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:

- 100% of the B Plant EU consists of the canyon building and surrounding graveled surfaces and paved areas.
- Individual occurrences of Piper's daisy have been previously documented in the buffer area adjacent to the EU boundary, however, none were observed during the 2015 survey.
- The B plant EU is not contiguous with any level 3 or level 4 resources in the adjacent landscape buffer; however, level 3 resource patches in the adjacent landscape buffer area to the northwest of B Plant provide mature sagebrush habitat supporting adult and juvenile loggerhead shrikes.
- Loss of the man-made structures within the EU (i.e., the canyon building and power poles used for bird nesting and perching) is not expected to significantly affect any wildlife populations.

Cultural Resources

The CP-DD-2 B Plant EU is located within the 200-East Area of the Hanford Site, an area known to have low potential to contain archaeological resources associated with the Native American Precontact and Ethnographic and Pre-Hanford Early Settlers/Farming landscape. 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.

Most of the CP-DD-2 B Plant EU has not been inventoried for archaeological resources and it is unknown is an NHPA Section 106 review has been completed for remediation of CP-DD-2 B Plant EU. One archaeological survey was completed for a portion of the EU under HCRC#87-200-037 (Hoover and Chatters 1988) with negative findings within the EU. It is unlikely that intact archaeological material is present in the areas that have not been inventoried for archaeological resources (both on the surface and in the subsurface), particularly because the soils in the CP-DD-2 B Plant EU appear to be heavily disturbed.

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

- There are twelve National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District (all 12 are contributing within the Manhattan Project and Cold War Era Historic District, 3 recommended for individual documentation, 9 with no additional documentation required). Mitigation for contributing buildings/structures has been completed as per the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE/RL-97-56) (DOE-RL 1998) and building demolition is ongoing.

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

- 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 500-meters of the CP-DD-2 B Plant EU. In accordance with the 1998 *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan (*DOE/RL-97-56), all documentation requirements have been completed for this property.
- The 216-B-5 Reverse Well is a National Register eligible property as a contributing component of the Manhattan Project and Cold War Era Historic District.

Closest Recorded TCP: There are two recorded TCPs associated with the Native American Precontact and Ethnographic Landscape that are visible from the CP-DD-2 B Plant EU.

CLEANUP APPROACHES AND END-STATE CONCEPTUAL MODEL

Selected or Potential Cleanup Approaches

The 1996 Agreement in Principle (DOE-RL1996) among the Tri-Parties of DOE, USEPA, and Washington State Department of Ecology (Ecology) established that the CERCLA Remedial Investigation/Feasibility Study process would be followed, on a case-by-case basis, to evaluate potential cleanup remedies and identify preferred alternatives for the final end state for the five major canyon buildings in the 200 Area of the Hanford Site. The 221-U Facility was selected as a pilot project for this effort. Its final RI/FS evaluated five remedial action alternatives, one of which was “Full Removal and Disposal”. In this alternative, the 221-U Facility structure and contents would be removed and demolished, including the foundation below existing grade level. Structural material, facility contents, and associated soil above risk-based standards would be disposed at the ERDF. The selected remedy was “Close in Place-Partially Demolish Structure”, under which equipment on the canyon deck will be consolidated into the process cells and hot pipe trench; equipment, process cells, and other open areas will be filled with grout, the structure will be partially demolished, and the remaining structure will be buried under an engineered

barrier. This alternative was determined to be more protective of remedial action workers and provide somewhat greater long-term effectiveness and permanence when compared to full removal and disposal of the facilities. It was also determined to provide somewhat greater long-term effectiveness and permanence at a lower cost than the two Entombment alternatives considered.[21] The B Plant and U Plant are very different with respect to their prior uses and levels of residual radiological contamination, but their canyon structures and the primary location of radiological contaminants are similar.

An *Action Memorandum for the Non-Time Critical Removal Action for the 224-B Plutonium Concentration Facility* (DOE/RL-2004-36) was issued in June 2004 that indicates that DOE intends to D&D the 224-B Building by removing the nonradiological and radiological hazardous substances from the facility, removing equipment and associated piping, decontaminating the structure and/or stabilizing the contamination, demolishing the structure to slab, disposing of the waste generated, and stabilizing the area. This alternative leaves the stabilized facility foundation in place, thereby isolating any potential subsurface contamination remaining after removal of the main structure. It is believed to provide the best balance of protecting human health and the environment associated with the hazardous substance inventory within the structures, meets the removal action objectives, and provides a cost-effective option. Demolition of the 224-B Building is expected to be deferred to coincide to the remedial action for the 221-B Canyon Facility.

The WESF Stabilization and Ventilation Project will stabilize the residual (legacy) contamination by filling the A through F Cells, hot pipe trench, K3 exhaust ductwork between hot cells and K3 filter, the K3 filter housings and the K3 filter pits with grout. No equipment/material will be removed from the hot cells before grouting (e.g., tanks, conduit, filters, etc.) and the hot cells will not be decontaminated (other facility areas may require minor decontamination efforts to support work activities). Sealing of windows and manipulator ports will also be performed. The risks to human health during this stabilization process have been reviewed and discussed in the CRESP Interim Report, Appendix H.4.

No cleanup decisions have been made for the Remaining Waste Treatment, Storage and Disposal Facilities such as WESF. Closure of facilities will be according to approved operating plans and closure plans (e.g., RCRA Closure Plans); consequently, cleanup actions will be determined and accomplished in accordance with applicable regulatory and permit/license requirements. No information is currently available regarding the final D&D of the WESF facility and if it will be carried out in combination with or separate from the D&D of the B Plant canyons and other facilities.

Contaminant Inventory Remaining at the Conclusion of Planned Active Cleanup Period

Assuming that the U Plant D&D concept is used, the contaminant inventory within the demolished and buried B Plant structures will likely be the same as their starting points. However, risk to human health, ecological receptors, or natural resources will be minimized by containment and institutional controls to eliminate potential pathways of exposure to the contaminants. This would be accomplished through waste encapsulation in grout, use of the substantial concrete canyon structure for entombment of waste, and the construction of an engineered barrier over the remaining grouted structure.

Risks and Potential Impacts Associated with Cleanup

In the 1960s the canyon and process cells were extensively decontaminated of residual plutonium when B Plant was prepared for the cesium separations mission. Some plutonium may remain in the air tunnel,

[21] CH2MHIll Plateau Remediation Company 2008, *Remedial Design/Remedial Action Work Plan for the 221-U Facility, DOE/RL-2006-21, Revision 0*, Prepared for the U.S. Department of Energy Assistant Secretary of Environmental Management U.S. Department of Energy, December 2008.

the underground ducts, and other portions of the canyon and old ventilation system; however, the only known or estimated remaining plutonium is in the old ventilation system filters. From 1995 through 1998, the primary activity in B Plant was deactivation of the structures and equipment. Deactivating B Plant involved eliminating the WESF operations' reliance on B Plant, minimizing the hazards at B Plant by removing the majority of residual process products, isolating the remaining hazards, and shutting down all B Plant processes. The radioactive material inventory remaining at the end of deactivation (primarily Cs-137, Sr-90 and much smaller amounts of Pu-238 to 242) was primarily in the form of contaminated equipment and surfaces, dust and debris, located below the deck in the process cells and deactivated filter vaults. There does not appear to be any reason workers would need to enter the process cells. Following the U Plant protocol, a fixative would be applied to all equipment located on the deck before being moved into the cells and all workers would wear protective gear. Such workers will be required to have extensive training on hazardous waste and radiologic safety, and will wear proper protective suits and respirators, radiation monitoring badges, and will undergo regular biomonitoring.

Movement of equipment on the deck and into the cells may require size reduction and will require lifting and movement with overhead or portable cranes. Although experienced skill craft workers will be responsible for these operations and special precautions will be taken, there is always the potential for an industrial type accident or injury within these confined spaces. It should be noted that there were no accidents or injuries during the U Canyon D&D work.

Methods under consideration at the U Plant for final demolition of the canyon structure include controlled blasting and manual methods including cutting, wrecking balls and jack hammers which will introduce worker risks similar to D&D building demolitions carried out on other buildings at Hanford. No DSA or other risk analysis of these last phases of D&D has been developed to determine major risks and potential impacts, and thus how applicable they will be to the final D&D of the B Plant.

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

Facility Worker

Protection of workers from physical, chemical, and radiological hazards would be achieved by mitigating hazards, extensive planning, use of mock ups, and worker training and protection (see attached *Hanford Site Hazards Guide* and CH2MHill Safety Reference Documents at http://chprc.hanford.gov/page.cfm/CHPRCSafetyReferenceDocuments).

Co-located Person

Protection of workers and other individuals located 100 meters from the B Plant boundary from physical, chemical, and radiological hazards would be achieved by mitigating hazards, extensive planning, use of mock ups, and worker training. Also see references in Worker section above.

Public

Surveillance and maintenance activities will continue throughout the D&D process to monitor radiological conditions, check safety related items, provide for facility-security controls and ensure there is no public access to the B Plant site by unauthorized personnel or the public.

Groundwater

As described in **Part V**, there is unlikely to be a significant impact during this period to groundwater (as a protected resource) from mobile primary contaminants from CP-DD-2. However, there are contaminant

sources (legacy source sites) in the vadose zone that may pose a very small continuing risk to groundwater (via the vadose zone). Because the area associated with CP-DD-2 sources is best represented by the B Barrier analysis (see previous section), the vadose zone (VZ) GTM values for the Group A and B primary contaminants for CP-DD-2 (during the Active Cleanup period) translate to ratings of *Low*. As indicated in **Part V**, Sr-90 and total uranium are unlikely to impact the groundwater in sufficient quantities to exceed the drinking water standard by the end of the Active Cleanup period and are thus rated *Low* to address uncertainty in the analysis. Groundwater in the area is being monitored, which when combined with the fact that remedial actions have not yet begun, result in no changes to ratings. These ratings correspond to an overall rating of *Low* for both the Active and Near-term, Post-Cleanup periods. The 200 East Area will continue to be monitored during this evaluation period to see if major changes result in additional groundwater contamination.

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 CP-DD-2 waste sites are described in Appendix G.5 for the CP-GW-1 EU.

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

Disposal at ERDF involves 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, 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. 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

Potential direct effects are possible from personnel, car, pick-up, truck and heavy equipment traffic/use through both target (remediation) and non-target areas during active cleanup. These activities may inadvertently expose resources close to the surface. Additionally, traffic through these areas may lead to the introduction of invasive species and/or a decrease in the presence of native plants used for medicinal or tribal religious purposes. Heavy equipment use for remedial activities (such as soil removal, remediation of contaminated soils, etc.) may lead to an alteration of the landscape, and the act of soil removal may destroy resources; if resources are not destroyed, then, soil removal may disturb or adversely affect resources. Utilization of caps, barriers and/or other containments may destroy resources located close to the surface. If resources are not destroyed, containments may disturb or adversely affect resources. Lastly, during remediation, radionuclides or other contamination released or spilled on the surface could have long-term effects if the contamination remains and resources become contaminated and/or plants having cultural importance to Tribes do no recolonize or thrive.

Potential indirect effects are possible from personnel traffic through target (remediation) areas as well as car, pick-up, truck and heavy equipment traffic/use through both target (remediation) and non-target areas. It is possible that these activities may decrease viewshed values and/or impact viewshed through the introduction of increased dust, the creation of trails, etc. Heavy equipment use for remedial actions including soil removal could potentially cause the complete destruction of viewsheds, plants and animals used for food, medicines for cultural purposes and could cause the possible introduction of invasive species that preclude restoration.

ADDITIONAL RISKS AND POTENTIAL IMPACTS IF CLEANUP IS DELAYED

The B Plant facilities are being maintained in a safe low-maintenance condition and are surround by a 6 ft. cyclone fence to prevent public or inadvertent access. Since the facility was placed into the S&M, a sloped metal roof was placed over the 221-B canyon roof to prevent water intrusion. According to the recent DSA reports, it is understood that B Plant is expected to remain in its current mode of S&M for an

extended period of time. Thus, there are no known additional risks or potential impacts that would be caused by a delay in its cleanup.

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

Assuming that the U Plant D&D concept is used at B Plant, the risk to human health, ecological receptors, or natural resources will be minimized by containment and institutional controls to eliminate potential pathways of exposure to the contaminants. This would be accomplished through waste encapsulation in grout, use of the substantial concrete canyon structure for entombment of waste, and the construction of an engineered barrier over the remaining grouted structure. The only humans that would be at potential risk would be those conducting and annual or five-year inspection of the barrier.

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

Table F.7-7. Summary of Populations and Resources at Risk or Potentially Impacted after Cleanup.

Population or Resource		Risk/Impact Rating	Comments
Human	Facility Worker	ND	No facility workers present except during annual and five-year inspections
	Co-located Person	ND	
	Public	ND	
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 F.7-6): *ND* (Sr-90 and U(tot)) and *Low* (others with reported inventories). Sr-90 and U(tot) not likely to impact groundwater (**Part V**) and given *Low* ratings here to address uncertainties. No treatment in 200 East thus no changes to ratings. Also predicted impact from changes in recharge rates not taken into account to address uncertainties.
	Columbia River from vadose zone[a]	Benthic: *Not Discernible* (*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]	ND to Low	Post-cleanup monitoring might pose a risk to level 3 and above resources in the buffer area. Possible disruption of migratory birds and Piper's daisy.
Social	Cultural Resources[b]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: None **Manhattan/Cold War** Direct: None Indirect: None	Potential direct effects are possible (and potentially permanent) if contamination remains and/or resources are contaminated. Resources may be destroyed and/or have to be removed. Plants having cultural importance to Tribes may not recolonize or thrive. Potential indirect effects are possible (and potentially permanent) if contamination remains and/or resources are contaminated. If contamination remains, access to and/or use of resources may be prohibited.

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 CP-LS-14 EU are described in **Part V** with more detailed evaluation in Appendix G.5 (CP-GW-1)

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

As noted above, assuming that the U Plant D&D concept is used at B Plant, the long-term risk to human health, ecological receptors, or natural resources after cleanup will be minimized by containment and institutional controls to eliminate potential pathways of exposure to the contaminants. This would be accomplished through waste encapsulation in grout, use of the substantial concrete canyon structure for entombment of waste, and the construction of an engineered barrier over the remaining grouted structure. The only humans that would be at potential risk would be those conducting and annual or five-year inspection of the barrier.

PART VII. SUPPLEMENTAL INFORMATION AND CONSIDERATIONS

Hanford Site-Wide Risk Review
CP-DD-2 (B Plant)
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
218-E-2A	218-E-2A; Burial Trench; Regulated Equipment Storage Site No. 02A	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-E-7	218-E-7; 200 East 222-B Vaults	Waste Site	Inactive	Accepted	None	Burial Vault	Burial Ground	200-EA-1		
200-E-179	200-E-179; Catch Tank in 216-B-10 A&B Pipeline (See Sitecode 200-E-174-PL); R-13 Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	TBD_200-IS-1		
241-B-302B	241-B-302B; 241-B-302-B Catch Tank; IMUST; Inactive Miscellaneous Underground Storage Tank; Line V217; 241-B-302	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-BX-302B	241-BX-302B; 241-BX-302-B Catch Tank; IMUST; Inactive Miscellaneous Underground Storage Tank; Line V288	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-BX-302C	241-BX-302C; 241-BX-302-C Catch Tank; IMUST; Inactive Miscellaneous Underground Storage Tank; Lines V322 and V323	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-ER-311	241-ER-311; 241-ER-311 Catch Tank; 241-ER-311A Replacement Tank; IMUST	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
241-ER-311A	241-ER-311A; 241-ER-311A Catch Tank; IMUST; Inactive Miscellaneous Underground Storage Tank; Old 241-ER-311; Original 241-ER-311 Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1		
UPR-200-E-64	UPR-200-E-64; Radioactive Soil and Ant Hills; UN-200-E-64; UN-216-E-36	Waste Site	Inactive	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-600-20	UPR-600-20; Old Cross Site Transfer Line Surface Contamination; UN-216-E-41	Waste Site	Inactive	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	200-OA-1		
216-B-10A	216-B-10A; 222-B-1 Crib; 292-B Drainage; 216-B-10 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-10B	216-B-10B; 222-B-2 Crib; 216-B-10 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-12	216-B-12; 216-ER Crib; 216-ER-1,2,3 Cribs	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-55	216-B-55; 216-B-55 Crib; 216-B-55 Enclosed Trench	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-60	216-B-60; 216-B-60 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-CB-1		
216-B-62	216-B-62; 216-B-62 Crib; 216-B-62 Enclosed Trench	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-9	216-B-9; 216-B-9TF; 241-B-361 Crib; 5-6 Crib and Tile Field; 216-B-361 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-DV-1		
200-E-142	200-E-142; Paint Brush Cleaning Station	Waste Site	Inactive	Accepted	None	Depression/Pit (nonspecific)	Burial Ground	TBD		
200-E-116-PL	200-E-116-PL; Direct Buried Pipelines V111/V210/V130, 8902; Pipelines from 241-B-154 Diversion Box to 241-C-151 and 241-C-152 Diversion Boxes	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-199-PL	200-E-199-PL; Lines V204, V206, V208, V209, V211, V213, V215, and V285; Tank Farm Lines from 241-B-154 Diversion Box to 241-B Tank Farm	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-201-PL	200-E-201-PL; Lines V315 and V319; Transfer Lines from 241-BX-155 to Diversion Boxes in 241-B Tank Farm	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-202-PL	200-E-202-PL; Lines V315, V316, V317, V318 and V319; Transfer Lines from 241-BX-155 Diversion Box to 241-BX-153 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-213-PL	200-E-213-PL; Lines V200, V329, V330, V331, V332, V333, and V334; Transfer Lines from 221-B to 241-B-154 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-215-PL	200-E-215-PL; Line V229; Transfer Line Between 241-ER-151 Diversion Box and 241-ER-152 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-226-PL	200-E-226-PL; Promethium Transfer Line; Transfer Line from 221-B to 241-C-154; V743	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-228-PL	200-E-228-PL; Drain Lines from 241-ER-151 Diversion Box to 241-ER-311 and 241-ER-311A Catch Tanks; Lines V224, V226 and V226-1	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
241-B-154	241-B-154; 241-B-154 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-BX-154	241-BX-154; 241-BX-154 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-BX-155	241-BX-155; 241-BX-155 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-ER-151	241-ER-151; 241-ER-151 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
241-ER-152	241-ER-152; 241-ER-152 Diversion Box; Line DR311	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1		
200-E-111-PL	200-E-111-PL; 3-38 Encasement; Encased Pipeline from 241-ER-151 Diversion Box and 221-B to 241-C Tank Farm and 244-AR Vault; Lines V108/V837/8618/8653/8901PAS, 809, 818, V836 and V834	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-145-PL	200-E-145-PL; Interplant Transfer Line; Tank Farm Transfer Line V228; Transfer Pipeline from 241-ER-151 to 241-CR-153	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-147-PL	200-E-147-PL; Interplant Transfer Line; Tank Farm Transfer Line PAS-244; Transfer Line from 244-CR-TK-003 to 241-ER-153	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-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-DD-2 (B Plant)
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-E-198-PL	200-E-198-PL; Encased Tank Farm Pipeline from 241-BX-154 Diversion to 241-BX-155 Diversion Box; Lines V282, V283, V284 and V285	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-217-PL	200-E-217-PL; Encased Transfer Line from 241-ER-151 Diversion Box to 241-BX Tank Farm; Lines 9808, 9653, 9719 and V225	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1		
600-284-PL	600-284-PL; Cross Site Transfer Pipeline; Lines V360, V361, V362, V363, V364 and V366; 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		
200-E-16	200-E-16; B Plant Waste Concentrator; Low Level Waste Concentrator; Single-Stage Thermal Siphon Reboiler	Waste Site	Inactive	Accepted	None	Evaporator	Process Building	Not Applicable		
200-E-100	200-E-100; Miscellaneous Stream #571; Steam Trap 2P-Yard-MSS-TRP-019	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-25	200-E-25; 272-BB French Drain; Insulation Shop French Drain; Miscellaneous Stream #659	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-55	200-E-55; Effluent Drain East of 291-B Sand Filter; Miscellaneous Stream #322	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-CB-1		
200-E-95	200-E-95; 222B Steam Condensate; Miscellaneous Stream #308	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-97	200-E-97; 212B Building Steam Condensate; Miscellaneous Stream #470	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-98	200-E-98; 271B Building Ice Machine Overflow; Miscellaneous Stream #490	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-99	200-E-99; Miscellaneous Stream #570; Steam Trap 2P-Yard-MSS-TRP-017	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
216-B-13	216-B-13; 216-B-13 Crib; 216-B-13 French Drain; 216-B-B; 291-B Crib	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-CB-1		
200-E-88	200-E-88; B Plant Yard Steam Condensate; Miscellaneous Stream #3	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-89	200-E-89; B Plant Yard Steam Condensate; Miscellaneous Stream #4	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-90	200-E-90; B Plant Yard Steam Condensate; Miscellaneous Stream #5	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-91	200-E-91; B Plant Yard Steam Condensate; Miscellaneous Stream #6	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-92	200-E-92; B Plant Yard Steam Condensate; Miscellaneous Stream #7	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-93	200-E-93; B Plant Yard Steam Condensate; Miscellaneous Stream #8	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-94	200-E-94; B Plant Yard Steam Condensate; Miscellaneous Stream #9	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
216-B-4	216-B-4; 216-B-4 Dry Well; 216-B-4 French Drain; 216-B-4 Reverse Well	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-CB-1		
216-B-5	216-B-5; 241-B-361 Dry Well; 241-B-361 Reverse Well; 241-B-5 Dry Well; 299-E28-29	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-DV-1		
216-B-6	216-B-6; 216-B-6 Crib; 216-B-6 Dry Well; 222-B-110 Dry Well; 222-B-110 Reverse Well	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-EA-1		
221-B NANU	221-B NANU; 221-B Nitric Acid Neutralization Unit; 221-B Elemenary Neutralization Unit for Nitric Acid	Waste Site	Inactive	Accepted	Interim No Action	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable		
221-B SHNU	221-B SHNU; 221-B Sodium Hydroxide Neutralization Unit; 221-B Elementary Neutralization Unit for Sodium Hydroxide	Waste Site	Inactive	Accepted	Interim No Action	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable		
270-E-1	270-E-1; IMUST; Inactive Miscellaneous Underground Storage Tank; 216-ER-1; 270-E CNT; 270-E Condensate Neutralization Tank	Waste Site	Inactive	Accepted	None	Neutralization Tank	Pipeline and associated valves, etc.	200-EA-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		
224-B	224-B; 224-B Concentration Facility	Waste Site	Inactive	Accepted	None	Process Unit/Plant	Process Building	Not Applicable		
B PLANT FILTER	B PLANT FILTER; Filter F-34-4; 221-B-TK-34-2 Decant Filter; B Plant Filter	Waste Site	Inactive	Accepted	None	Process Unit/Plant	Process Building	Not Applicable		
200-E-112-PL	200-E-112-PL; 24-Inch VP Line; 2904-E-1; B Plant Process Sewer; Pipeline from B Plant to 207-B Retention Basin	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-160-PL	200-E-160-PL; Pipeline from 270-E-1 to 216-B-12 Crib; V219	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-161-PL	200-E-161-PL; Pipeline from 221-BB to 216-B-55 Crib; V841	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-162-PL	200-E-162-PL; Lateral Line to 216-B-12 Crib #2; Pipeline from 221-BB to 216-B-62 Crib; V842	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-174-PL	200-E-174-PL; 216-B-10 (A&B) Pipeline; Pipeline from 221-BC and 222-B to 216-B-10 A&B Cribs	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-175-PL	200-E-175-PL; Pipeline from 292-B to 216-B-10 A&B	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-188-PL	200-E-188-PL; 2904-E-2; B Plant Chemical Sewer Line; BCE; 15-Inch VP Line	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-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-DD-2 (B Plant)
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-E-195-PL	200-E-195-PL; Line V204; Pipeline form 241-B-154 Diversion Box to 241-B-361 Settling Tank and 216-B-9 Crib	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-209-PL	200-E-209-PL; Pipeline from 272-BB to 200-E-25 Dry Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-214-PL	200-E-214-PL; Pipeline from 291-B Sand Filter to the 200-E-55 French Drain	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-230-PL	200-E-230-PL; Pipeline from 292-B to 216-B-4 Reverse Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-243-PL	200-E-243-PL; Pipeline from 291-B-1 Stack to the 216-B-13 French Drain	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-277-PL	200-E-277-PL; Pipelines from 221-B and 221-BA to 216-B-59 and 216-B-59B Basins	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-279-PL	200-E-279-PL; Pipeline from 241-B-361 Settling Tank to 216-B-5 Reverse Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
216-B-59B	216-B-59B; 216-B-59 Retention Basin	Waste Site	Inactive	Accepted	None	Retention Basin	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-64	216-B-64; 216-B-64 Crib; 216-B-64 Retention Basin; 216-B-64 Trench	Waste Site	Inactive	Accepted	Interim No Action	Retention Basin	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-30	200-E-30; 221-B Stack Sand Filter; 291-B Sand Filter	Waste Site	Inactive	Accepted	None	Sand Filter	Pipeline and associated valves, etc.	TBD		
221-B SDT	221-B SDT; 221-B Settle and Decant Tank; 221-B-8-1 and 221-B-8-2; 221-B-TK-8-1 and 221-B-TK-8-2; B Plant Settle and Decant Tank	Waste Site	Inactive	Accepted	None	Settling Tank	Underground Storage Tank	Not Applicable		
241-B-361	241-B-361; 241-B-361 Settling Tank; IMUST; Inactive Miscellaneous Underground Storage Tank	Waste Site	Inactive	Accepted	None	Settling Tank	Underground Storage Tank	200-EA-1		
200-E-137	200-E-137; 291-B Exhaust Stack; 291-B-1	Waste Site	Inactive	Accepted	None	Stack	Process Building	Not Applicable		
200-E-138	200-E-138; 291-B Replacement Stack; 296-B-1 Exhaust Stack; Canyon Exhaust System; Canyon Ventilation Upgrade	Waste Site	Active	Accepted	None	Stack	Process Building	Not Applicable		
221-B-WS-1	221-B-WS-1; B Plant Storage	Waste Site	Inactive	Accepted	None	Storage	Storage Pad	Not Applicable		
221-B-WS-2	221-B-WS-2; B Plant Waste Piles	Waste Site	Inactive	Accepted	None	Storage	Storage Pad	Not Applicable		
221-B-26-1	221-B-26-1; 221-B-TK-26-1; B Plant Radioactive Organic Waste Solvent Tank 1	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-27-3	221-B-27-3; 221-B-TK-27-3; B Plant Radioactive Organic Waste Solvent Tank 2	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-27-4	221-B-27-4; 221-B-TK-27-4; B Plant Radioactive Organic Waste Solvent Tank 3	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-28-3	221-B-28-3; 221-B-TK-28-3; B Plant Radioactive Organic Waste Solvent Tank 4	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-28-4	221-B-28-4; 221-B-TK-28-4; B Plant Radioactive Organic Waste Solvent Tank 5	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-29-4	221-B-29-4; 221-B-TK-29-4; B Plant Radioactive Organic Waste Storage Tank #7; 221-B TK-29-4	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
221-B-30-3	221-B-30-3; 221-B-TK-30-3; B Plant Radioactive Organic Waste Solvent Tank #6; 221-B TK-30-3	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable		
216-B-59	216-B-59; 216-B-58 Ditch; 216-B-58 Trench	Waste Site	Inactive	Accepted	None	Trench	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-117	200-E-117; Contamination Zone South of B Plant	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-129	200-E-129; Stabilized Area on East Side of B Plant Railroad Cut	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-130	200-E-130; Stabilized Area on West Side of B Plant Chemical Spur	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-26	200-E-26; Diesel Fuel Contaminated Soil; Heavy Equipment Storage Area	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-28	200-E-28; 221-B Building Contaminated Steam Condensate Release	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
200-E-29	200-E-29; Unplanned Release from 241-ER-152 Diversion Box	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-1	UPR-200-E-1; Waste Line Failure on South Side of 221-B	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-103	UPR-200-E-103; BCS Line Leak South of R-17 at 221-B; UN-200-E-103	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CB-1		
UPR-200-E-11	UPR-200-E-11; Railroad Track Contamination Spread; UN-200-E-11	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-OA-1		
UPR-200-E-112	UPR-200-E-112; Contaminated Railroad Track from B-Plant to the Burial Ground; UN-200-E-112	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-2	UPR-200-E-2; Spotty Contamination Around the B and T Plant Stacks; UN-200-E-2	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-3	UPR-200-E-3; Line Leak from 221-B to 241-BX-154; UN-200-E-3	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		

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Hanford Site-Wide Risk Review
CP-DD-2 (B Plant)
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-E-44	UPR-200-E-44; BCS Waste Line Leak South of 221-B; UN-200-E-44	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CB-1		
UPR-200-E-45	UPR-200-E-45; Contamination Spread from the 241-B-154 Diversion Box; UN-200-E-45	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-E-52	UPR-200-E-52; Contamination Spread Outside the North Side of 221-B; UN-200-E-52	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-54	UPR-200-E-54; Contamination Outside 225-B Doorway; UN-200-E-54	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-55	UPR-200-E-55; Contamination Spread South of B Plant; UN-200-E-55	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-69	UPR-200-E-69; Railroad Car Flush Water Radioactive Spill; UN-200-E-69; UN-216-E-69	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-7	UPR-200-E-7; Cave-In Near 216-B-9 (241-B-361 Crib); Pipeline Leak; UN-200-E-7	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		
UPR-200-E-77	UPR-200-E-77; 241-B-154 Diversion Box Ground Contamination; UN-200-E-77; UN-216-E-5	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-E-78	UPR-200-E-78; 241-BX-155 Diversion Box Ground Contamination; UN-200-E-78; UN-216-E-6	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-E-80	UPR-200-E-80; 221-B R-3 Line Break; R-3 Radiation Zone; UN-200-E-80; UN-216-E-8	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CB-1		
UPR-200-E-84	UPR-200-E-84; 241-ER-151 Catch Tank Leak (241-ER-311A); UN-200-E-84; UN-216-E-12	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		
UPR-200-E-85	UPR-200-E-85; Line Leak at 221-B Stairwell R-13; UN-200-E-41; UN-200-E-85; UN-216-E-13; UPR-200-E-41	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-87	UPR-200-E-87; 216-E-15; 224-B South Side Plutonium Ground Contamination; UN-200-E-87; UN-216-E-15	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
218-E-6	218-E-6; B Stack Shack Burning Pit; Buried Contamination	Waste Site	Inactive	Accepted	Rejected	Burial Ground	Burial Ground	Not Applicable	X	Rejected
216-B-56	216-B-56; 216-B-56 Crib	Waste Site	Inactive	Accepted	Rejected	Crib	Crib - Subsurface Liquid Disposal Site	Not Applicable	X	Rejected
TFS OF 218-E-4	TFS OF 218-E-4; Tile Field South of 218-E-4; 2607-E3 Tile Field	Waste Site	Inactive	Accepted	Consolidated	Drain/Tile Field	Septic System	Not Applicable	X	Septic System
217-B NU	217-B NU; Elementary Neutralization Unit/217-B Building; 217-B Neutralization Unit	Waste Site	Inactive	Accepted	Rejected	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable	X	Rejected
200-E-163-PL	200-E-163-PL; Pipeline from BCS Diverting Pit to 216-B-64 Retention Basin	Waste Site	Inactive	Not Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	Not Applicable	X	Not Accepted
200-E-6	200-E-6; Sanitary Sewer Repair and Replacement 2607-E4; Septic Tank	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-CB-1	X	Septic System
2607-E3	2607-E3; 2607-E3 Septic System; 2607-E3 Septic Tank and Drainfield; TFS of 218-E-4; Tile Field South of 218-E-4	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-EA-1	X	Septic System
2607-E4	2607-E4; 2607-E4 Septic Tank and Tile Field	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-CB-1	X	Septic System
200-E-122	200-E-122; CF Bullpen; Construction Forces Bullpen; Equipment Storage Yard; Laydown Yard	Waste Site	Inactive	Accepted	Rejected	Storage	Storage Pad	Not Applicable	X	Rejected
WESF	WESF; 225-B; Waste Encapsulation and Storage Facility	Waste Site	Active	Accepted	None	Storage	Process Building	Not Applicable	X	Included in WESF Eval.
200-E-119	200-E-119; 225-B West Side 90 Day Pad	Waste Site	Inactive	Not Accepted	None	Storage Pad (<90 day)	Storage Pad	Not Applicable	X	Not Accepted
226-B HWSA	226-B HWSA; 226-B Hazardous Waste Storage Area	Waste Site	Active	Accepted	Rejected	Storage Pad (<90 day)	Storage Pad	Not Applicable	X	Rejected
UPR-200-E-140	UPR-200-E-140; PCB Oil Spill at 211-B Bulk Chemical Storage Area; UN-200-E-140	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Rejected
UPR-200-E-90	UPR-200-E-90; Ground Contamination Around B Plant Sand Filter; Radioactive Spill Near 221-B Building; UN-200-E-90; UN-216-E-18; UN-216-E-90	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Rejected
211BA	ELECTRICAL EQUIPMENT STORAGE	Facility	ACTIVE			BUILDING	Infrastructure Building			
211BB	MOTOR CONTROL CENTER (MCC) BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
212B	FISSION PRODUCTS LOAD OUT STATION	Facility	INACTIVE			BUILDING	Infrastructure Building			
217B	DEMINERALIZATION BUILDING	Facility	INACTIVE			BUILDING	Process Building			
218B	EMERGENCY EQUIPMENT STORAGE SHED	Facility	ACTIVE			BUILDING	Infrastructure Building			
221BA	COOLING WATER MONITORING STATION	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BB	PROCESS STREAM AND CONDENSATION BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BC	SWP CHANGE HOUSE	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BD	LAUNDRY STORAGE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BF	CONDENSATE EFFLUENT DISCHARGE FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BG	B PLANT COOLING WATER SAMPLING BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
221BK	B PLANT CANYON VENTILATION INSTRUMENT BLDG	Facility	INACTIVE			BUILDING	Infrastructure Building			
222B	OFFICE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
225BB	K3 FILTER PIT ENCAPSULATION FACILITY	Facility	ACTIVE			BUILDING	Process Building			
225B-BA	225B BOILER ANNEX	Facility	INACTIVE			BUILDING	Infrastructure Building			
225BC	ENCAPSULATION COMPRESSOR FACILITY	Facility	ACTIVE			BUILDING	Infrastructure Building			
225BD	ENCAPSULATION WASTE MONITORING AND SAMPLE BLDG	Facility	ACTIVE			BUILDING	Infrastructure Building			
225BE	ENCAPSULATION MAINTENANCE SHOP	Facility	ACTIVE			BUILDING	Infrastructure Building			
225BF	WESF TANKER LOADOUT STATION	Facility	ACTIVE			BUILDING	Infrastructure Building			
225BG	WESF CLOSED LOOP COOLING EQUIPMENT BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			

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Hanford Site-Wide Risk Review
CP-DD-2 (B Plant)
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
225BG-GEN1	BACKUP GENERATOR BLDG WITH 2 DIESEL FUEL TANKS	Facility	ACTIVE			BUILDING	Infrastructure Building			
225E	PUMP STATION NO 2 AND LOCAL CNTRL UNIT 55C-10	Facility	ACTIVE			BUILDING	Infrastructure Building			
2711B	BREATHING AIR COMPRESSOR BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
2712B	ELECTRICAL/INSTRUMENTATION BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
2715B	PAINT STORAGE FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building			
2716B	RM CHECK OUT STATION RR TUNNEL	Facility	INACTIVE			BUILDING	Infrastructure Building			
271B	B PLANT SUPPORT BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
271BA	LAUNDRY STORAGE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building			
272B	ELECTRICAL MAINTENANCE SHOP	Facility	ACTIVE			BUILDING	Infrastructure Building			
272BA	DRY MATERIAL STORAGE BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
272BB	TOOL CRIB	Facility	ACTIVE			BUILDING	Infrastructure Building			
276B	PAINT SHOP	Facility	INACTIVE			BUILDING	Infrastructure Building			
282B	WATER PUMP HOUSE SOUTH	Facility	ACTIVE			BUILDING	Infrastructure Building			
282BA	WATER PUMP HOUSE NORTH	Facility	ACTIVE			BUILDING	Infrastructure Building			
291B	EXHAUST AIR CONTROL HOUSE AND SAND FILTER / STACK	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BA	EXHAUST AIR SAMPLE HOUSE	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BB	INSTRUMENT BUILDING 1ST AND 2ND FILTER VAULTS	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BD	INSTRUMENT BLDG AND 3RD FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BF	INSTRUMENT BUILDING AND 4TH FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BG	INSTRUMENT BUILDING AND 5TH FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BH	FIFTH FILTER VAULT PLUG COVER	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BJ	INSTRUMENT BUILDING AND 6TH FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BK	INSTRUMENT BUILDING FOR 5TH AND 6TH FILTER VAULTS	Facility	INACTIVE			BUILDING	Infrastructure Building			
292B	STACK MONITOR STATION	Facility	INACTIVE			BUILDING	Infrastructure Building			
294B	BACKFLOW PREVENTOR BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
225BA	K1 FILTER PIT ENCAPSULATION FACILITY	Facility	ACTIVE			STRUCTURE	Process Building			
291BC	1ST AND 2ND FILTER VAULTS AND 291BD ACCESS CONTROL	Facility	INACTIVE			STRUCTURE	Infrastructure Building			
HS0023	HAZARDOUS STORAGE CONTAINER	Facility	ACTIVE			STRUCTURE	Infrastructure Building			
241B154	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
221B	B PLANT	Facility	INACTIVE			BUILDING	Process Building		X	Included in B Plant Eval.
224B	CONCENTRATION FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Duplicative
225B	WASTE ENCAPSULATION AND STORAGE FACILITY	Facility	ACTIVE			BUILDING	Process Building		X	Included in WESF Eval.
MO029	MOBILE OFFICE AT B-PLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO232	MOBILE OFFICE AT 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO312	LAUNDRY STORAGE AT 225B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO400	MOBILE OFFICE AT 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO408	MOBILE OFFICE AT BPLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO410	MOBILE OFFICE AT BPLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
211BA151	DEMO'D -- MONITORING STATION	Facility	DEMO""D			STRUCTURE	Infrastructure Building		X	Demoed
216B10B	CRIB AND TILE FIELD	Facility	INACTIVE			STRUCTURE	Crib - Subsurface Liquid Disposal Site		X	Duplicate of 216-B-10B
241BX154	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241BX155	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241ER151	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241ER152	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241B361	UNDERGROUND WASTE SETTLING TANK	Facility	INACTIVE			TANK	Underground Storage Tank		X	Duplicative

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