

**Washington Department of Ecology
Nuclear Waste Program
Compliance Report**

Site:	B Plant Complex	RCRA Site ID:	WA7890008967
Inspection Date:	August 19, 2014		
Site Contacts:	Joel Williams Jr., CH2M Hill Plateau Remediation Company (CHPRC), Regulatory Inspection Lead		
Phone:	(509) 376-4782	FAX:	N/A
Site Location:	Hanford Site		
At This Site Since:	March 2, 1943	NAICS #:	56221, 924110, 54171
Current Site Status:	Treatment, Storage, Disposal Facility / Closure Unit Group # 24		
Compliance Index #:	14.502		

Ecology

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 Other Representatives: Kathy Conaway, Nancy Ware, Stephanie Schleif
 Report Date: March 11, 2015
 Report By: Edward Holbrook


(Signed)

3/11/15
(Date)

Owner/Operator Information

Site Location: The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number, and is considered a single Resource Conservation and Recovery Act of 1976 (RCRA) facility, even though the Hanford Site contains numerous processing areas spread over large geographic areas. The Hanford Site is approximately a 586 square mile tract of land located in Benton County, Washington. It is divided into a number of dangerous waste management units (DWMUs), that are administratively organized into "unit groups". A unit group may contain only one DWMU, or many. Currently, there are 37 unit groups at the Hanford Site. Individual DWMUs use only a few small portion of the Hanford Site. Additional descriptive information on the individual DWMUs is contained in unit group permit applications and in Parts III, V, and VI of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, WA78900008967, Revision 8C*, (hereafter referred to as the Permit).

Background and Activities

The DWMUs are identified in the September 22, 2008, *Washington State Department of Ecology, B Plant Complex, Revision 11, Addendum A* (Part A Application). According to the Part A Application, CHPRC has operated the B Plant Complex since January 1, 2008. The B Plant Complex's canyon building (221-B) contains the majority of the DWMUs. 221-B is known as a "Tier 1" and "Key Facility" under the Action Plan, Section 8, *Facility Disposition Process* in the *Hanford Federal Facility Agreement and Consent Order, Revision 8c*, July 18, 2011 (HFFACO).

According to Section 8 of the HFFACO 221-B is under a facility disposition process. The outline of the process includes the following phases:

- 1) Transition
- 2) Surveillance and maintenance (S&M)

TS-2-3
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3) Disposition

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The process integrates Department of Energy's (DOE) January 2000 *Order 430.1B, U.S. Department of Energy Real Property Asset Management, September 24, 2003* and *The Decommissioning Handbook (DOE/EM-0383)*, with the RCRA and the Comprehensive Environmental Response Compensation Liability Act (CERCLA) requirements.

Section 8, Table 8-1 *Status of "Key Facilities" as of March 2010* in the HFFACO, states the following under "Canyon Buildings" for 221-B:

- Deactivated in accordance with the *B Plant End Points Document, WHC-SD-TPP-054, Revision 2B (End Points Document)*.
- S&M performed in accordance with the *Surveillance and Maintenance Plan for the 221-B Facility B Plant, DOE/RL-99-24 (S&M Plan)*.
- Final disposition to be addressed using CERCLA remedial action coordinated with RCRA closure. Completion schedules to be established with the Remedial Investigation and Feasibility Study (RI/FS) Work Plans and Remedial Design and Remedial Action (RD/RA) Work Plans in accordance with Action Plan §11.6 and HFFACO Action Plan Appendix D (M-085 milestones).

Under §8.1 of the HFFACO, "Notwithstanding any other provision of Section 8, EPA and Ecology reserve the right to require closure in accordance with Federal and State hazardous waste law, and the Agreement, and to require response or corrective actions in accordance with RCRA and CERCLA and the Agreement, at any time. During the facility disposition process, DOE shall comply with all applicable environmental, safety and health, and security requirements." The Washington State Department of Ecology (Ecology) and EPA are responsible for the RCRA, CERCLA, and HFFACO regulatory oversight of the B Plant Complex.

Ecology conducted an announced inspection of the B Plant Complex's, DWMUs on August 19, 2014. The Washington State Hazardous Waste Management Act, Chapter 70.105, Revised Code of Washington (RCW), and the rules declared in Chapter 173-303 of the Washington Administrative Code (WAC), regulate the management of dangerous waste (DW) in Washington State. The inspection was conducted to review DOE's and CHPRC's compliance with the following:

- General Treatment, Storage and Disposal Facility (TSDF) Requirements (WAC 173-303-280 through WAC 173-303-395).
- Pursuant to Permit Condition I.A, unit-specific interim status standards in accordance with WAC 173-303-400, including those sections of 40 Code of Federal Regulation Part (CFR) 265 incorporated by reference.
- Hanford Federal Facility Agreement and Consent Order (HFFACO).

The B Plant Complex was a plutonium recovery facility located in the 200 East Area of the Hanford Site. The facility operated under the plutonium recovery mission from 1945 to 1952.

In the late 1950s, concerns regarding the heat from radioactive waste in the single-shell tanks prompted DOE to remove some of the radioactive isotopes. After some experimentation and process development, DOE chose the B Plant Complex for the large-scale separating mission.

The facility upgrades started in 1962 and ended in 1967. Between 1968 and 1983, the facility separated the radioactive isotopes from the single-shell tank waste. More than 100 million curies of Strontium-90 and Cesium-137 were recovered and put in capsules. Since 1974, DOE has stored the capsules at the Waste Encapsulation and Storage Facility (WESF), located adjacent to the 221-B.

In 1984 and 1985, DOE prepared the facility for a new mission, to pre-treat Hanford Site tank waste. In 1990, DOE dropped plans to use the B Plant Complex as the pre-treatment facility, because the facility could not meet modern safety, seismic, or secondary containment standards.

Between 1990 and 1995, The B Plant Complex continued to support operations at WESF, with limited facility stabilization, cleanup, and waste removal activities beginning.

On October 5, 1995, DOE issued a shutdown order for the B Plant Complex. This order included separating WESF from 221-B so WESF could function independently.

The transition phase began after the shutdown order, which consisted of further facility stabilization, cleanup, waste removal, and inventory activities. DOE decommissioned the B Plant Complex and transitioned the facility into the S&M phase on September 28, 1998.

Since the S&M phase began, DOE and applicable contractors have conducted routine and non-routine S&M at the B Plant Complex. These S&M activities are discussed in detail later in the report. CHPRC uses the S&M Plan to ensure activities at the facility meet applicable requirements.

According to the Part A Application, the B Plant Complex DWMUs are in four structures.

- 221-B Canyon Building
- 276-BA Interim Organic Storage Facility
- 221-BB Process and Steam Condensate Building
- 221-BF Process Condensate Effluent Discharge Facility

Also according to the Part A Application, the DWMUs are described in three categorical systems.

- Tank Systems: There are five waste tank systems, with a total of 55 vessels. DOE has used the tank systems for treatment or storage of DW or mixed waste (MW). Each tank system includes storage vessels, ancillary equipment, and secondary containment that continue to contain, or contaminated with DW or MW. The five tanks systems are as follows:
 - Neutralized Current Acid Waste Treatment and Storage System (NACW)
 - Low Level Waste Treatment and Storage System
 - Low Level Waste Concentrator
 - Organic Mixed Waste Storage
 - Miscellaneous Tanks Storage System
- Container Storage: Beginning in 1987, MW and radioactive-only waste have been stored in the container storage cell (Cell 4). According to the *Calendar Year 2009 Hanford Site Mixed Waste*

Land Disposal Restrictions Full Report, Revision 0, DOE/RL-2010-27 (2009 LDR Report), Cell 4 stores seven drums of MW and 36 drums of Low Level Radioactive Waste.

- **Containment Building:** Each of the process cells and the canyon deck in 221-B are considered a part of the containment building for storage of discarded or failed process equipment and lead shielding materials. The process equipment, including jumpers, may contain lead used as weights, counterweights, or shielding. The lead shielding may be in the form of sheets, bricks, and blankets. The process equipment and shielding may be contaminated with MW residues as well.

Inspection Summary

Ecology notified DOE and CHPRC one day prior to the inspection. I led the inspection while Ms. Conaway, Ms. Ware, Ms. Schleif provided inspection support, and Rick Bond (Ecology Project Manager) accompanied us for the in-brief. We arrived at building MO-294 on August 19, 2014. The building is used by CHPRC's S&M organization for administrative support and record keeping. We proceeded to the conference room for introductions, a safety briefing, and an inspection briefing at 9:20 a.m. Present at the in-brief were ten DOE and CHPRC staff and five Ecology staff. After introductions, Darrin Corriell (CHPRC S&M Facility Manager) provided the safety briefing. I then explained that Ecology is inspecting the B Plant Complex's DWMUs DW and MW management activities.

I requested an overview of DOE's and CHPRC's B Plant Complex management activities and regulatory status. Brian Dixon (CHPRC Environment Compliance and Records Director) said the following. The regulatory status of the B Plant Complex is covered under Section 8 of the HFFACO. The facility is on a path towards decommissioning and demolition (D&D) as one of a number of "Key Facilities." Section 8 refers to milestones that place the facility under a CERCLA remedial action path toward final disposition.

Below are the milestones I observe in the HFFACO under Appendix D.

- **Milestone Number (M-085-00):** Complete response actions for the canyon facilities and associated past practice waste sites, other Tier 1 Central Plateau facilities not covered by existing milestones, and Tier 2 Central Plateau facilities.
This includes B Plant, PUREX, and REDOX canyons and associated past practice waste sites in 200-CB-1, 200-CP-1, and 200-CR-1 Operating Units. The milestone does not include U Plant or T Plant canyons. The due date is "TBD" (to be determined).
- **Milestone Number (M-085-01):** Submit a change package to establish a date for major milestone M-085-00. The due date is currently September 30, 2022.
- **Milestone Number (M-085-02):** Submit a change package to establish a schedule for submittal of the RI/FS Work Plans for the 200-CB-1, 200-CP-1, and 200-CR-1 Operable Units and a schedule for submittal of the Removal Action Work Plans for 224B and 224T Plutonium Concentration Facilities. The due date is currently September 30, 2015.

Mr. Dixon referred to the Section 8, Table 8-1 of the HFFACO, which states "Final disposition to be addressed using CERCLA remedial action coordinated with RCRA closure." He said the current milestone to establish a schedule for the submittal of the RI/FS work plan would assist with determining the CERCLA remedial action. He said the RCRA Closure Plan would be submitted in coordination with

the RI/FS work plan for the B Plant Complex. He also said that the M-085 milestones would likely be completed after U Plant's D&D is finalized.

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Mr. Dixon said DOE and CHPRC are utilizing the experiences and lessons learned at U Plant to create plans for the rest of the "Key Facilities." He said that completion of U Plant's D&D phase was approximately 2017, which could lead to deferring schedules for the B Plant Complex to a later date.

Mr. Dixon said the B Plant Complex completed the transition phase in 1998. The facility then entered the S&M phase and has limited activities that follow the requirements established in the S&M Plan. He said that DOE and CHPRC are currently working on revision 4 of the S&M Plan.

Ms. Conaway asked if DOE and CHPRC have a closure plan available for the B Plant Complex. Mr. Dixon reiterated that the facility will have a closure plan for Ecology when DOE and CHPRC are scheduled to provide a RI/FS work plan. He said, the direction that DOE and CHPRC are following is under Section 8 of the HFFACO.

I asked for a current inventory of the DW and MW being stored at the B Plant Complex. Mr. Dixon said the following. Appendix A in the S&M Plan has the current summarized inventory and if I needed details regarding particular tanks, containers, or the containment building I would find that information in the *Documentation of Remaining Hazardous Substances/Dangerous Waste in B Plant, Revision 0* (HNF-3208). Jennie Seaver (CHPRC Field Sustainability Manager) said that the container inventory and details for the TSD Unit (Also known as the DWMUs) could be found in Appendix K of HNF-3208.

NOTE: The containers Ms. Seaver is referring to are in Cell 4 of the DWMUs. Upon further review of HNF-3208, the S&M Plan, and the 2009 LDR Report, I identified discrepancies between the three documents. Both HNF-3208 and the 2009 LDR Report show a total of 43 containers, 7 of which are designated as MW. Appendix A of the S&M Plan identifies a total of 33 containers and indicates all of them contain "Solid mixed waste with no free liquids." and "Light bulbs with lead solder." Further details regarding this discrepancy and the documents can be found later in the report.

Ms. Seaver also explained the purpose of the End Points Document. She said the End Points Document was used during the transition phase and states how to decommission the B Plant Complex in preparation for the S&M phase. The document lists objectives and criteria to be completed and prompts operation personnel to sign and date when an objective and criteria are met.

NOTE: The applicable sections of the End Points Document, related to the DWMUs are identified later in this report.

I asked if there is a document that breaks down each system and provides inventories of DW and MW for each container and tank in the DWMUs. Mr. Dixon mentioned the Part A Application shows components in each system of the TSD Unit. He said the systems that make up the TSD Unit include the Tank Systems, Cell 4, and the Containment Building. Tony McKarns (DOE Richland Operations Office Representative) said that specific inventories of DW and MW would be found in HNF-3208.

I asked a series of questions regarding closure requirements for the DWMUs. Mr. Dixon provided the following. Since deactivating the facility for the S&M phase, he was not aware of any DW or MW being accepted at the TSD Unit. The last receipt of waste was prior to 1999, but was likely years earlier when the B Plant Complex was ordered to shutdown in 1995. The last waste accepted would most likely be associated with the last mission and identified in historical records. Mr. Dixon said that any

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closure requirements necessary for the B Plant Complex would be found in the S&M Plan. He stated that if the closure requirements were not found in the S&M Plan, they were not applicable to the facility.

Before the inspection, I reviewed the *B Plant Complex Preclosure Work Plan, Revision 1*, DOE/RL-98-12 (Preclosure Work Plan). The last mission, before DOE issued the shutdown order was support activities for WESF.

The requirements I inquired about were to verify whether DOE and CHPRC are managing the various DWMUs to closure requirements [40 CFR Part 265 Subpart G, as incorporated by reference in WAC 173-303-400(3)(a)] or applicable interim status standards (WAC 173-303-400).

WAC 173-303-400(1) *Purpose*. "The purpose of WAC 173-303-400 is to establish standards which define the acceptable management of dangerous waste during the period of interim status and until certification of final closure or, if the facility is subject to post-closure requirements, until post-closure responsibilities are fulfilled."

I asked Mr. Dixon if DOE and CHPRC are managing the DWMUs under interim status standards until closure requirement are met [WAC 173-303-400(1)]. Mr. Dixon referenced Section 8 of the HFFACO for closure requirements. He said the timeline and requirements for closure would be addressed under Section 8 and the applicable requirements described in the S&M Plan. I asked if DOE or CHPRC have submitted a closure plan as required under interim status standards, [40 CFR 265.112(d)(1), as incorporated by reference in WAC 173-303-400(3)(a)]. Mr. Dixon responded that the closure plan is tied to the M-085 milestones and the CERCLA actions related to those milestones. He said Ecology was not provided a closure plan, because of the requirements dictated in the S&M plan, Section 8 of the HFFACO, and the M-085 milestones.

I asked Mr. Dixon and Mr. Corriell if the S&M activities at the B Plant Complex generate any DW or Universal Waste (UW). Mr. Dixon said if UW is generated at the B Plant Complex the UW would be taken back to the primary work location (Building 4802) for consolidation and eventually transported to Centralized Consolidated Recycling Center. Mr. Corriell said the CHPRC S&M personnel have generated UW, such as lamps or batteries. He did not recall the S&M personnel generating any DW within the last two years. On September 19, 2014, I provided DOE and CHPRC a series of follow up questions via email. Joel Williams submitted a response to Ecology on October 22, 2014, that confirmed no DW was generated at the B Plant Complex within the last two years.

I asked about discrepancies I observed when reviewing the 2009 LDR Report and *Calendar Year 2013 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, Revision 0*, DOE/RL-2014-07 (2013 LDR Report). I explained that the 2009 LDR Report showed the Containment Building had 290,000 kilograms of MW, while the 2013 LDR Report showed 0 kilograms of MW for the Containment Building. Mr. Dixon and Ms. Seaver said that they were unaware of the discrepancies

and would have to talk to the personnel responsible for generating the reports. In the October 22, 2014 response, DOE and CHPRC provided the following.

"During the review of the LDR reports for this response, it was discovered that in the 2011, 2012, and 2013 LDR reports in Table 1-1 and Table 4-1, the Containment Building Inventory volume was inadvertently marked as '0.' Each year, the LDR report's waste volumes tables are

automatically populated from 'Total Volume (cubic meters)' waste volume information fields in the LDR database. However, in the case of B Plant Containment Building, the LDR database has continuously identified the contained waste mass (294,000kg) information for B Plant Containment Building rather than waste volume (cubic meters) information typically used for other units. The waste mass (294,000kg) information is contained in a comment field in the LDR database. The field 'Total Volume (cubic meters)' for the B Plant Containment Building is blank. The waste mass (294,000kg) was not converted to waste volume (cubic meters) due to the variety of densities of waste within the B Plant Containment Building, and the resulting difficulty in converting the waste mass into a realistic waste volume equivalent. As a result, each year, it was required to manually enter the B Plant waste mass of 294,000kg information into the LDR report waste volume Table 1-1 and Table 4-1. Due to an oversight in preparing the 2011 LDR report, the report was finalized with a B Plant Containment Building waste volume of '0,' as automatically populated from the LDR database. There was no manual entry of the correct information. This error was repeated during preparation of the reports for the following years. An errata sheet will be prepared for the next LDR report identifying the error and correction."

The B Plant Complex's Containment Building identified in the 2009 LDR Report and the *Calendar Year 2010 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, DOE/RL-2011-31, Revision 0* (2010 LDR Report), showed the volume of MW as 294,000 kilograms. DOE and CHPRC failed to provide accurate information regarding the inventory of MW, under milestone "M-026-01, W, X And Intervening Years." The waste volume stored within the Containment Building was recorded as "0" for the following LDR Reports.

- *Calendar Year 2011 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, DOE/RL-2012-12, Revision 0*
- *Calendar Year 2012 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, DOE/RL-2013-19, Revision 0*
- *Calendar Year 2013 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, DOE/RL-2014-17, Revision 0*

DOE and CHPRC have also documented the tank systems under the *Potential Mixed Waste Table Appendix C* in the 2009 LDR Report and Table 1-4 in the 2010 through 2013 LDR Reports. The criteria for placing "Potential MW" on the potential mixed waste table are defined in the LDR Reports. What is not clearly identified is the possibility of vessels in the tank systems generating MW after 1987. Numerous efforts have been made to characterize and designate MW in the vessels. The vessels were abandoned after 1987, with volumes of MW left in place. Volumes of MW may have to be re-evaluated and inventoried in Tables 1-1 and 4-1 of the LDR report.

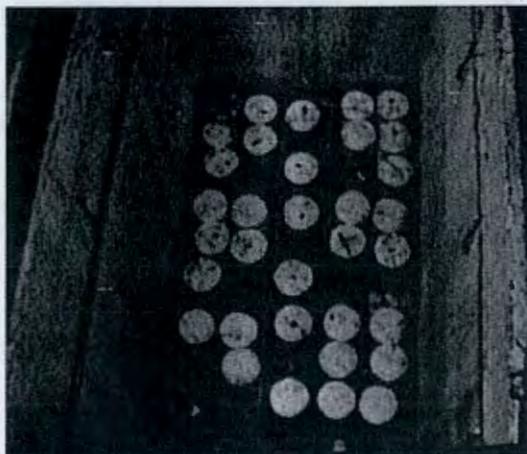
I asked about the management of containers currently being stored at the B Plant Complex. Mr. Dixon stated the following. The only containers at the facility are stored in Cell 4 and are inaccessible to ensure labeling requirements are being met. S&M personnel currently cannot check for non-obscured, removed, or otherwise unreadable labels and replace them. The labels to identify the MW and major hazards could have been placed on the containers, but he wasn't certain since the last container was placed in the cell before the S&M phase. He said there could be photographs in the historical record of the labeling, before they were placed in Cell 4.

According to the S&M Plan, Section 6, Table 6-1, "No TSD unit inspections or surveillance are performed since all the TSD units are in un-accessible portions of the B Plant Complex." According to

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the Preclosure Work Plan, Cell 4 is a concrete cell in 221-B that is covered with a concrete block. The block can only be removed by a crane within the canyon that is not operational for the S&M phase. Mr. Dixon also said the 221-B canyon cannot be accessed due to concerns of radiation exposure to personnel. Areas of radiation contamination within the canyon can be found in HNF-3208, Table 2.



221-B Building, Cell 4, Container Storage
94040656-5CN Photo Taken 1994
Excerpt 1: Part A Application, from Page 12

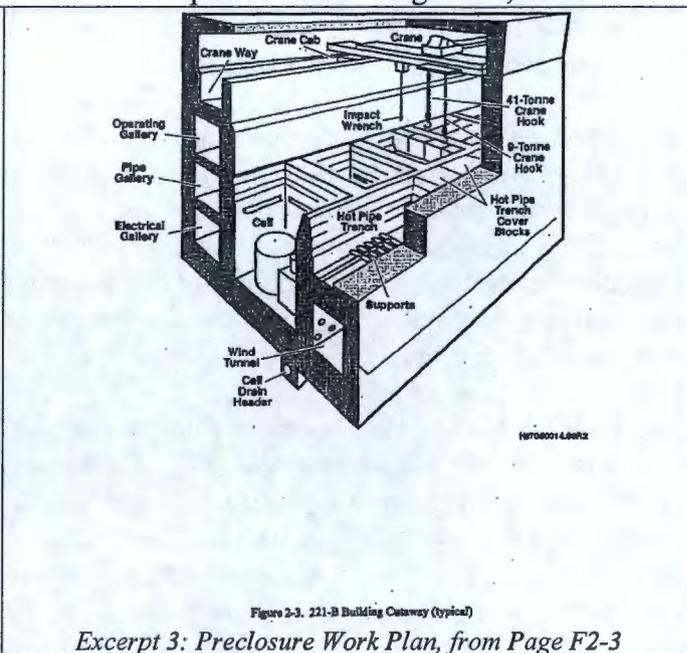
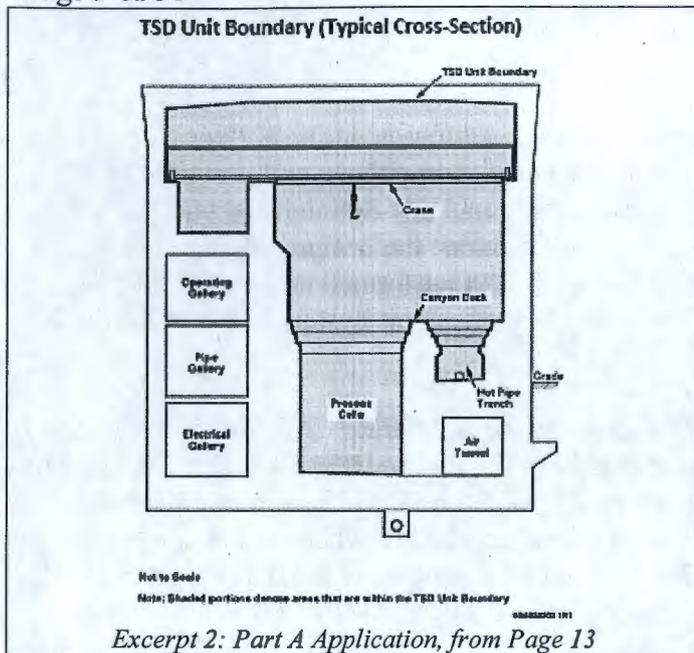
I asked about B Plant Complex's general waste analysis requirements, waste analysis plan, and waste acceptance procedures. Ms. Seaver said that these documents would be historical and would not be found in the current record keeping system, since the last receipt of waste was over 10 years ago.

I asked about B Plant Complex's security requirements. Mr. Corriell stated the following. The facility is unoccupied and is surrounded by a fence, which the S&M personnel control access through locked gates. Hanford Patrol and the Benton County Sheriff's Office make frequent patrols of the area around the B Plant Complex. The Facility also has an electronic notification system; known as "SAMCON" that alerts the assigned supervisor of maintenance issues, such as a ventilation failure.

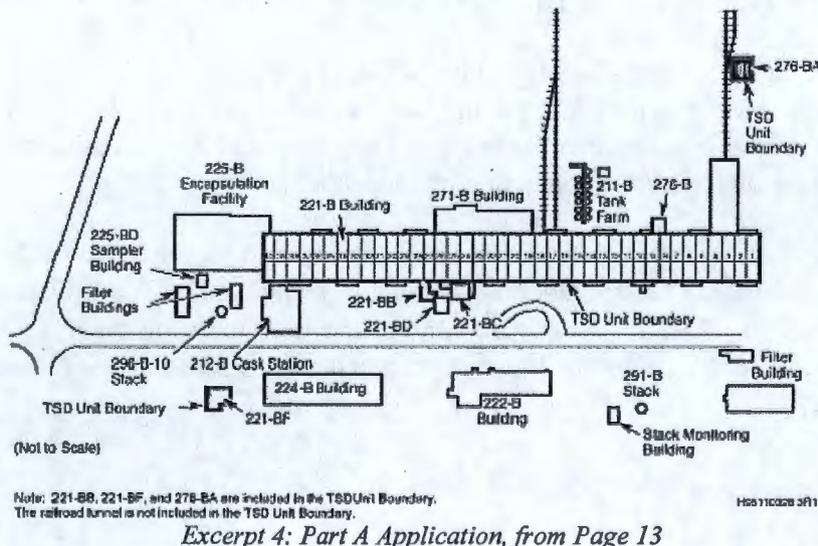
I asked about B Plant Complex's general inspection requirements. Mr. Dixon said applicable requirements would be found in the S&M Plan. S&M personnel conduct annual surveillance, periodic maintenance (e.g. ventilation), gather stack readings, and look for discrepancies during those visits. I observed under §2.3.2 *Annual Surveillance* in the S&M Plan the following "Walk-through surveillance of B Plant will be conducted and documented annually by the S&M contractor to include the Case 1 spaces (routine access) and Case 3 spaces (external areas), as described in HNF-SD-WM-TPP-054, and parts of the 221-B, 222-B, 271-B, 212-B, and outdoor areas."

NOTE: HNF-SD-WM-TPP-054 is also known as the End Points Document. The Case 1 and Case 3 spaces refer to categorical sections of the B Plant Complex. The contents regarding the End Points Document is described in later in the report.

Case 1 spaces as described in the End Points Document list 221-B Electrical Gallery, Pipe Gallery and Stairwells (Stairwells 1, 3, 11, 13, and 19). According to the Part A Application diagram, *TSD Unit Boundary (Typical Cross-Section)*, these inspected areas fall outside of the DWMUs.



Case 3 spaces as described in the End Points Document list Organic Storage Tanks, 221-B Facility Exterior, 221-BB Steam Condensate (BCS) Building Exterior, 221-BF Process Condensate (BCP) Storage Building Exterior. Although all four DWMU structures are listed, only the exterior is examined in accordance with the S&M Plan and *Technical Procedure 2CP-SUR-B-04008 "B Plant Annual Facility and Grounds Surveillance," Revision 2, Change 3, Dated 04/17/2014* (Annual Surveillance Procedure).



I observed the following in the S&M Plan, Section 6, Table 6-1. The "General Inspections WAC 173-303-320" states "Routine Surveillances are performed as identified in this S&M plan. No TSD Unit inspections or surveillance are performed since all of the TSD Unit is in un-accessible portions of the B Plant Complex." The facility has four below grade tanks that are located in structures 221-BB and 221-BF (BCP, BCS, 221-BF-A, and 221-BF-B tanks) are accessible through above ground buildings. The

facility also has an above ground tank (ISO East vessel) at 276-BA that is surrounded by a chain-link fence and accessible through a locked gate.

I asked about inspection record retention and how deficiencies were addressed at the B Plant Complex. Mr. Dixon said I should look at the S&M Plan regarding deficiencies, corrections, and preventative maintenance. Mr. Corriell said over the last 3 years they have not found any deficiencies with the TSD Unit. He also said if there was a problem, S&M personnel would contact the design authority to help formulate a resolution. Mr. Dixon said that records for all of the S&M performed are entered into the record management system, known as the Integrated Document Management System and kept for the lifetime of the facility.

I asked if the S&M Plan is a primary document. Mr. Dixon stated the following. A list of Primary Documents is identified under Section 9, *Documentation and Records*, in the HFFACO. The S&M Plan is not listed as a Primary Document or Secondary Document. He said the S&M Plan could fall under Section 9, Table 9-1 "Other work plans" or "Other documents as specified elsewhere in the agreement." After the inspection I reviewed the October 18, 1996 *Federal Facility Agreement and Consent Order Change Control Form, Change Number M-20-96-01*. The revised milestone M-20-21A is as follows.

"Submit a B Plant Preclosure Work Plan to Ecology; March 1999; A Preclosure Work Plan will be submitted to Ecology for approval. It will include the proposed B Plant end point criteria and S&M Plan for approval of actions pertaining to TSD units and hazardous substances/dangerous wastes which will remain in place following transition."

The change package appears to indicate the S&M Plan was part of a package submitted for approval with the Preclosure Work Plan, under milestone M-20-21A. The Preclosure Work Plan is listed as a primary document under Table 9-1 in the HFFACO.

I asked about the operating procedures identified in the S&M Plan for the annual surveillance inspection. Mr. Dixon and Mr. Corriell said the procedures for annual surveillance inspections are part of a work package they use to conduct the inspection. They also said the procedures were attached to the data sheets for the completed annual surveillance inspections.

I requested the *Central Plateau Project Work Document Package Number SM-14-02056 "B-Plant Annual Surveillance" April 2014* (Work Document Package). Within the Work Document Package is the Annual Surveillance Procedures. According to the procedure the following locations are inspected annually and found in data sheets 1 and 2. The data sheets are the checklists used during the annual surveillance inspection.

- Building 221-B
- Building 222-B
- Building 271-B
- Building 224-B
- Building 212-B
- B Plant Exterior and Yard Surveillance, North Yard: Area North of 221/271-B, including 217-B.

- B Plant Exterior and Yard Surveillance, South Yard: Area South of 221-B, 212-B, 222-B, 224-B, and 291 area, including 291-B Filter, 291-B Sand Filter, and Drain (WIDS Site 200-E-55, just east of the Sand Filter).

According to the Annual Surveillance Procedures the following items are inspected in data sheets 1 and 2 during the annual surveillance inspection.

- Building/Area Secure
- Structural Integrity
- Animal/Pest Intrusion
- Electrical Hazards
- Ground Subsidence (Exterior)
- Lighting System (Interior)
- Housekeeping
- Occupational Hazards
- Signage
- Water Intrusion (Leaks)
- Containers
- Fire Protection Engineer (FPE)
Combustible Material Storage
- FPE Combustible Loading
- FPE Egress (For Interior/Exterior Surveillance)
- Transient combustibles taken in or generated during surveillance (if any) removed

I observed data sheet 3 in the Annual Surveillance Procedure, lists the following criteria for the *B Plant RCRA Treatment, Storage and Disposal Facility Surveillance*.

- Signage: "Danger – Do Not Enter: Authorized Personnel Only" signs are posted and visible at each approach, visible from 25 feet (if possible), with legible and unobscured print.
NOTE: Check all four sides of 276-BA Fence, R-1 door, R-3 door, R-7 door, R-9 door, R-11 door, 221-BC door, R-13 door, R-15 door, R-17 door, R-19 door, and stairwells 11 & 13 leading to the crane way, outside entrances to stairwells, 1, 3, 9, 15, 17, and 19.
- Building/Area Secure: Door locks and related postings in place and functional, and no obvious abnormal or unsafe conditions and no leaking transformers, light ballasts, pumps, motors, process piping, and other liquid filled components.
- Ground Subsidence: No indications of ground subsidence (as might be due to water leaking from broken underground pipes, etc.).
- Water Intrusion (Leaks): No standing water or evidence of current or recent water pathways into or out of TSD areas within the facility.

After reviewing the Work Document Package, I did not observe a completed data sheet 3. I did observe the completed data sheets 1 and 2 for 221-B, 222-B, 271-B, 224-B, 212-B, North Yard, and South Yard. According to the Annual Surveillance Procedures, under §1.2, "The B Plant facility is a treatment, storage, and disposal (TSD) Site. The TSD inspection is also completed once per year. The assigned TSD number is WA 7890008967." The inspection of the DWMUs appears to have not been conducted during the April 2013 annual surveillance inspection.

I also observed the Work Document Package does not include inspections of buildings 221-BB, 221-BF, and 276-BA, which house tanks associated with the DWMUs. The only observation recorded for these buildings was on April 9, 2013, during the South Yard exterior inspection. The observation states, "West wall of 221-BB subsidence appears rain runoff is washing soil matrix under the building foundation". I did not observe comments that the interior boundary and the tank associated with the DWMU was inspected.

I asked about B Plant Complex's training program and plan. Mr. Dixon said the following. There is a training plan that covers S&M personnel that visit the B Plant Complex. The training plan has 14 categories of personnel. I requested to see records for the Building Emergency Director (BED), Environmental Compliance Officer (ECO), Nuclear Chemical Operator (NCO), and Field Work Supervisor (FWS). Mr. Dixon also said Mr. Corriell implements the training program and that he and Ms. Seaver identify what needs to go in the training plan.

I asked a series of questions regarding the requirements for preparedness and prevention. Mr. Corriell stated the following. The S&M personnel have limited access to the B Plant Complex, which include infrequent perimeter checks, maintenance, and scheduled S&M activities. Personnel entering the facility perimeter have radios and cell phones. The personnel's supervisor receives computer generated messages from SAMCOM for active facility systems, such as ventilation. The S&M personnel utilize portable emergency equipment located on the back of a vehicle at building MO-294. The vehicle accompanies S&M personnel when visiting a facility. The B Plant Complex's alarm systems are deactivated. Personnel accessing the facility rely on 200 East Area alarms during emergency situations.

After interviewing personnel, Ms. Conaway, Ms. Ware, Ms. Schleif, and I reviewed the documents that I requested. The documents included the training records, training plan, and building emergency plan. Other records available were reviewed after the inspection back at the Ecology office.

Ms. Ware and Ms. Schleif reviewed the *Central Plateau Project Surveillance and Maintenance Dangerous Waste Training Plan PRC-STD-TQ-40236, Revision 1, Change 2*, and training records for the BED, ECO, NCO, and FWS. Ms. Ware and Ms. Schleif did not observe any concerns with the Training Plan. Ms. Ware noted that the training plan is not specific to the B Plant Complex. Instead, the plan is utilized for the S&M organization and the personnel that conduct activities at the B Plant Complex and other S&M facilities. Ms. Ware and Ms. Schleif did not observe any concerns with the training records provided.

I reviewed the *Building Emergency Plan for Surveillance and Maintenance, HNF-IP-0263-CP S&M, Revision 15* (BEP). Buildings and facilities covered by this BEP is the B Plant Complex, REDOX Complex, PUREX Complex, 224-B, 224-T, 242-B/BL, and less than 90-day accumulation area(s) managed by S&M personnel. I observed that the BEP was missing evacuation routes or alternative evacuation routes for the B Plant Complex. I asked Mr. Corriell why the BEP did not have any evacuation routes identified for the B Plant Complex. Mr. Corriell said the BEP is for multiple facilities and each evacuation route would depend on the emergency event and the facility.

I observed the following discrepancies and lack of specific information with the BEP after the inspection. Section 3 states that during off-hours, the Building Emergency Director (BED) on call list is distributed by "Emergency Preparedness". It isn't clear who or what "Emergency Preparedness" is. §3.1 states that a list of BEDs by title, work location, and work number is contained in section 13. Section 13 does not list BED's by title. The title section says "Facility Operations." §5.3 – *Dangerous/Mixed Waste* makes general statements that less than 90 waste accumulation areas and satellite accumulation areas may be set up and locations are maintained by the Environmental Compliance officer. The specific details of where and what is accumulated in these "as-needed" accumulation areas is not specifically addressed in the BEP. Also specific facility hazards such as tanks, containment buildings, and containers storing DW or MW are not specifically mentioned. Section 7

states a generalized process for implementing basic protective actions and response actions. It does not describe the use of separate emergency response procedures. Various site wide emergency procedures are referenced in attachment A, but it is not clear that they are utilized by BED or other staff under the BEP. §7.2.5 – *Hazardous Material, Dangerous and/or Mixed Waste Spill*, the acronym “SWIMS” does not include “stop the spill” and is different than other SWIM/SWIMS acronyms seen on the Hanford Site. The section also refers Section 9 if the Hanford Fire Department’s response is not needed. Section 9 description of spill and emergency equipment and locations is not specific, especially regarding “as needed” accumulation areas. §9.6 – *Incident Command Post* does not indicate staging areas and anticipated Incident Command Posts with emergency resource material for each facility covered by the BEP.

I asked about an Ecology inspection conducted on February 28, 1996. The report from the inspection identified findings that Ecology requested to be addressed during the transition phase. Mr. Dixon and Mr. Williams said that they would provide me the response from DOE and Westinghouse Hanford Company (Contracted operator at the time), with the other documents I requested.

After reviewing documents Ms. Ware, Ms. Conaway, Ms. Schleif, and I conducted a walkthrough of the B Plant Complex. The first location is one of four structures that make up the DWMUs. According to the Part A Application, 221-BF consists of two below grade tanks, 221-BF-A and 221-BF-B. The tanks are accessible through a structure adjacent to the concrete blocks that cover the tanks. According to the CHPRC NCO that accompanied us during our walkthrough, the above ground structure facilitates access for sampling the two tanks. According to Table 4-2 of the Preclosure Work Plan the 221-BF-A tank has a tank heel volume of 235 liters, no residue, and is "Empty and below minimum heel." 221-BF-B tank has a tank heel volume of 235 liters, no residue, and is "Empty and below minimum heel."

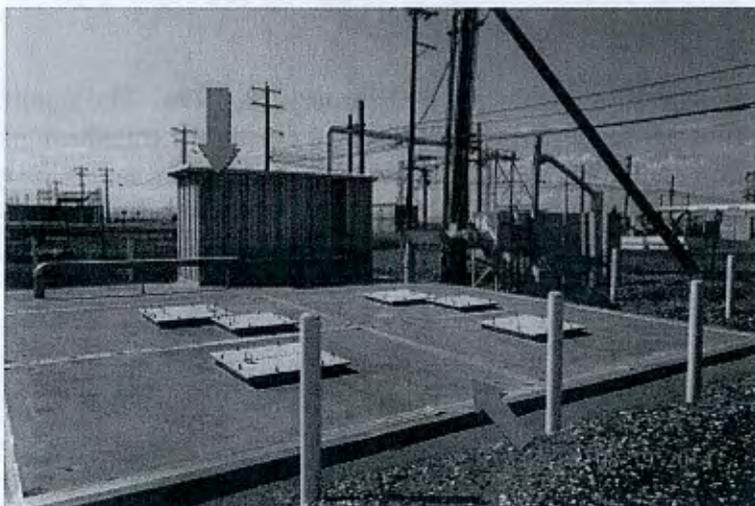


Photo 1: Building 221-BF (~Southwest corner of B Plant Complex)

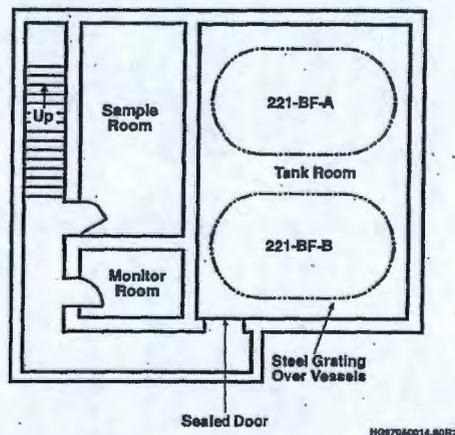


Figure 2-6. 221-BF Condensate Effluent Discharge Facility.

Excerpt 5: Preclosure Work Plan, from Page F2-6

Our next location is the second of four structures that make up the DWMUs. According to the Part A Application, 221-BB consists of two below grade tanks BCP and BCS. The tanks are accessible through a sheet metal structure, which sits above a condensate pit, where the tanks are located. According to Table 4-2 of the Preclosure Work Plan the BCP tank has a tank heel volume of less than 189 liters, no residue, and is "Empty and below minimum heel." The BCS tank has a tank heel volume of less than 189 liters, no residue, and is "Empty and below minimum heel."

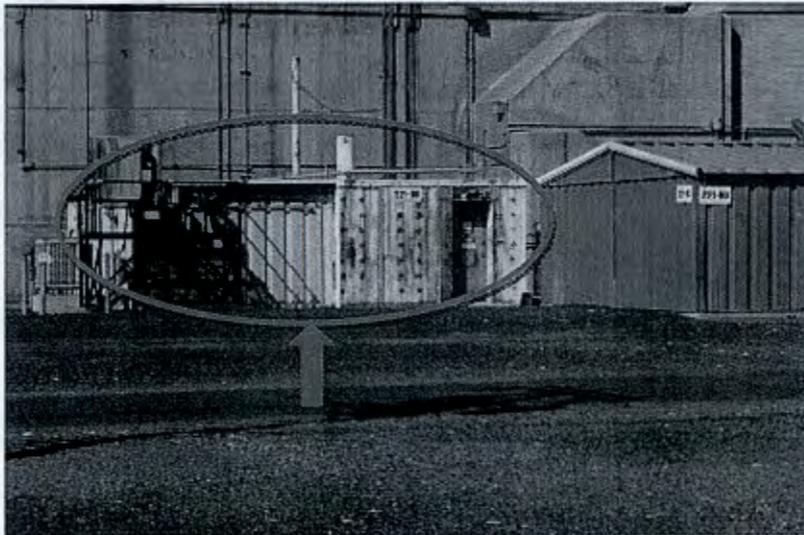


Photo 2: Building 221-BB (Adjacent to South side of 221-B Building)

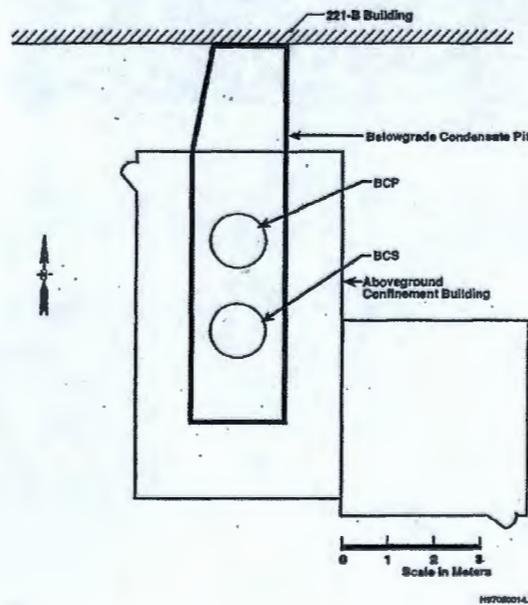


Figure 2-4. 221-BB Process and Steam Condensate Building.
Excerpt 6: Preclosure Work Plan, from Page F2-5

The next location houses the programmable logic controller (PLC) in building 221-BK. According to the S&M Plan, the PLC “provides data acquisition for monitoring data controls for the ventilation system exhaust fans, stack flow, and sampling system.” The PLC also monitors TK-10-1 liquid level, which accumulates liquid from 221-B canyon’s liquid in-leakage.

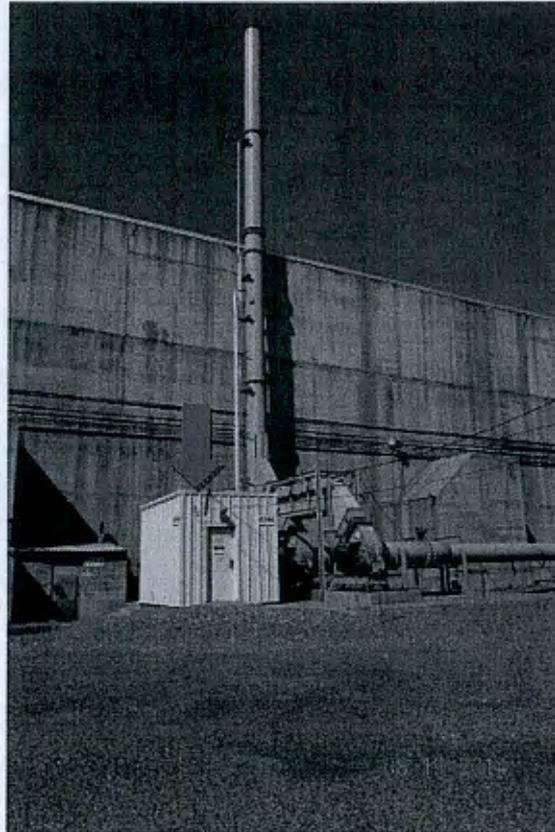


Photo 4: Building 221-BK (Houses PLC Equipment)

The next location is the third of four structures that make up the DWMUs. According to the Part A Application, the 221-B consists of the Containment Building, Cell 4 and the majority of the five tank systems that make up the DWMUs. I observed the East wall, where Ray Stevens (CHPRC Design Authority Engineer) showed us a crack. Mr. Stevens said the crack is under an ongoing monitoring effort. I observed the crack nearly runs from the top to the bottom of 221-B. Mr. Stevens said there were no immediate actions necessary to repair the wall and despite the crack, the wall is structurally intact.

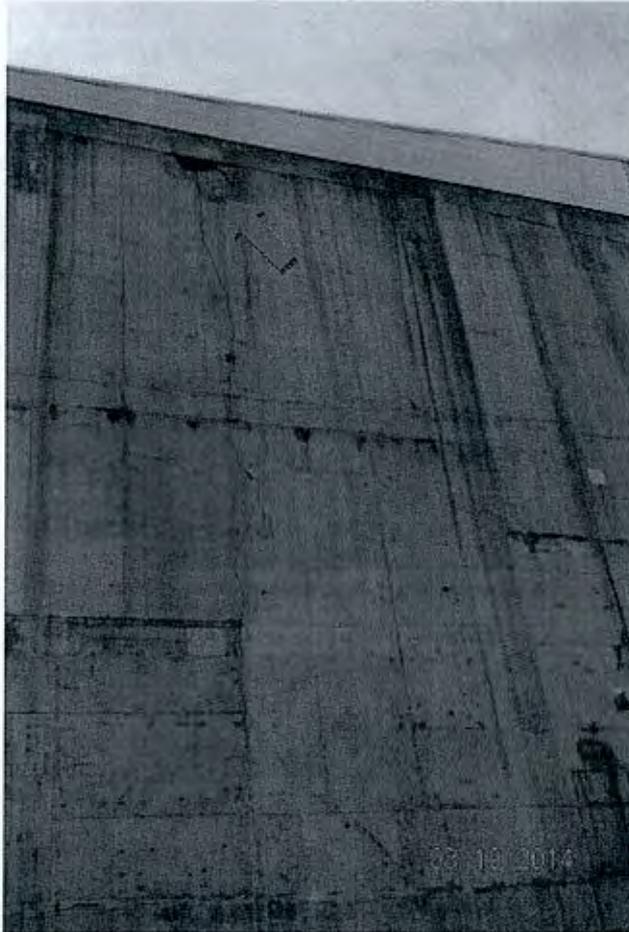


Photo 5: East side 221-B Canyon Building

The final location is the fourth of four structures that make up the DWMUs. According to the Part A Application, 276-BA currently consists of one above ground tank and a concrete secondary containment structure that previously housed two tanks (ISO East and ISO West). The ISO-East tank is part of the organic MW tank storage system and has no walls and roofing. According to Table 4-2 of the Preclosure Work Plan the ISO East tank has no tank heel, no residue, and is "Empty and below minimum heel." I did not observe any labels or signs indicating that the tank is storing DW, MW, or major risk labels.

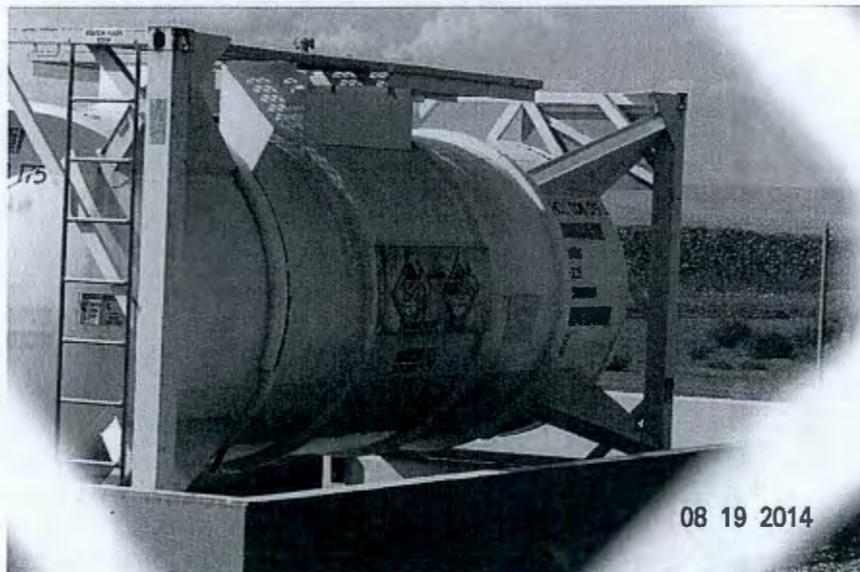
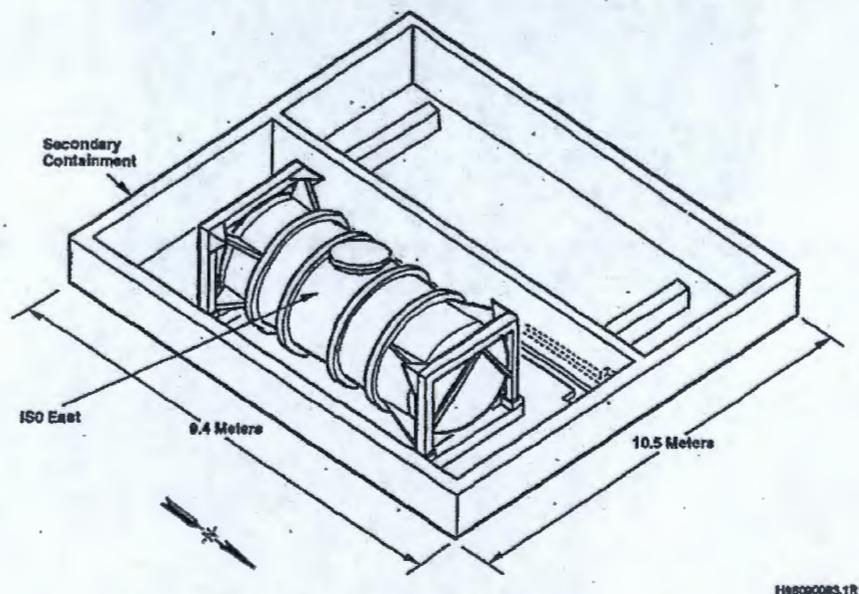


Photo 6: 276-BA (Secondary containment housing the ISO East Tank)



Excerpt 7: Preclosure Work Plan, from Page F2-8

After our walkthrough of the B Plant Complex, we returned to MO-294 for a out-briefing. I explained that a further review of the records would need to be conducted. I also explained the process for generating an inspection report. We left approximately at 4:20 p.m.

Document and Records Review

The following documents I reviewed are in chronological order from 1996 to present. The documents detail the progression of events, actions taken, and status of the DWMUs.

1996 Ecology Inspection and DOE Response Letter Review: On February 28, 1996, Ecology conducted an inspection of the B Plant Complex, during the transition phase. The response to the inspection findings were addressed in a letter and enclosure from DOE's Environmental Assurance, Permits and Policy Division Director. Letter 96-TPD-104 was received in July 1996 by Ecology and addresses five findings. I focused my observations on DOE's first response under "Assessment of existing tank system integrity – WAC 173-303-400 (40 CFR 265.191)."

Ecology's February 28, 1996 inspection report notes the following under *Documents Review Findings*.

"TPA Milestones M-32-07, 'Complete B-Plant Interim Status Actions,' required an integrity assessment plan and report for tanks to be routinely used for clean-out and stabilization activities. However, the target milestones established to accomplish these assessments did not include tanks 10-1 or 9-1, which are routinely used to process any wastes within the B-Plant canyon."

DOE's letter, 96-TPD-104, dated July 2, 1996, responded to the finding in its attached enclosure.

"Tank 10-1 and tank 9-1, cited specifically as not having been assessed for system integrity, were identified in February 1996, as dangerous waste tanks when the B Plant low-level liquid waste stream was re-designated. While not assessed for tank system integrity, liquid levels for tanks 10-1 and tank 9-1 have been continuously monitored, and the data from the monitoring is reviewed as part of daily plant surveillance. As discussed with Ecology's B Plant Transition Team, tanks 10-1 and 9-1 are scheduled to be removed from service and isolated by September 30, 1998. Therefore, RL will continue tank liquid level monitoring and will perform daily surveillance of the tank liquid levels for 10-1 and 9-1. Liquid level monitoring and daily surveillances for the B Plant tank systems actively managing dangerous waste will be maintained, where capabilities exist, until the waste sources are eliminated and the tanks deactivated. For tanks that cannot be inspected (i.e., tank level monitoring, daily surveillance of tank level data) a complete inventory of the tank number(s), tank(s) contents and major risks will be maintained, as well as the respective reasons why the inspection requirements cannot be met (Attachment 1 to this enclosure). Additionally, the cell 10 sump liquid level monitoring will be maintained, daily surveillance of the sump levels conducted, and appropriate action taken when indications of liquid in the sump are detected. This Action will occur until tank 10-1 is deactivated."

"Based on discussions with the Ecology Project Manager and because of the planned deactivation of B Plant, no visual inspections, integrity tests, or secondary containment upgrades will be performed for B Plant tank systems unless the tanks are operated beyond September 30, 1998. Ground water monitoring issues are discussed below and provide response to Ecology's recommendation that ground water monitoring and/or subsurface geophysical monitoring be considered as alternatives to integrity assessment."

The following is documented for TK-10-1 in HNF-3208, *Table 1: Chemical Composition and Amount Left in Tanks and Vessels*.

- Present Status: Inactive with liquid and sludge heel, 1 inch
- Composition: Ag (Silver) 35 grams, Na (Sodium) 430 kilograms, P (Phosphorus) 2.9 kilograms, Si (Silicon) 207 grams, Zn (Zinc) 41 grams, Zr (Zirconium) 22 grams
- Reference Document: Sample Number S98B000169* (*These tanks were not actually sampled, but are expected to have the same pedigree as this sample.)
- Existing Volume: 980 Gallons
- Date Emptied: May 6, 1998

The following is documented for TK-10-1 in the Preclosure Work Plan, *Table 4-2: Treatment and/or Storage Vessels Status*.

- System: LLW
- Tank Heel: 5,776 Liters (~1,525 Gallons)
- Waste Residue Known to be Present: Yes
- Comments: Empty and below minimum heel. Large amount of waste residue (solids/sludge) present is increasing the heel volume. Volume of residue is not known.

The Preclosure Work Plan, §2.2.2.2 *Secondary Containment in the 221-B Building* states the following. "The majority of the process cell floors are sloped toward the southeast corner of the cell. In that corner, a 152-millimeter vertical drain connects to the cell drain header. The cell drain header is a 610-millimeter earthenware pipe that drains into a collection tank (TK-10-1) in Cell 10."

The S&M Plan, §2.2.2.5 *Canyon Liquid Level (TK-10-1) Monitoring and Removal* states the following. "Liquid in-leakage to the B Plant canyon is collected in Cell 10 by TK-10-1 and is monitored by the PLC." In §2.2.2.3 the "programmable logic controller," (PLC) is located outside of the canyon in building 221-BK. The facilities monitoring data is consolidated in the PLC for S&M personnel to review.

The S&M Plan, §3.3 *Types of Maintenance and Frequency* states the following. "Cell 10 TK-10-1 liquid level instrumentation calibration; as recommended in procedures." It appears the remote nature of Cell 10 limits access to the tank's secondary containment and liquid level monitoring instruments for an integrity assessment. DOE stated in the 96-TPD-104 letter that tanks operated after September 30, 1998, would need to address requirements such as visual inspections, integrity tests, or secondary containment upgrades. I have not observed any indications that these requirements have been met by DOE and CHPRC.

According to the S&M Plan, TK-10-1 appears to be actively managing liquids that could possibly designate as DW or MW. It is uncertain what the actual volume of liquid left in the tank is because several documents have discrepant amounts listed. Due to the tanks past activities and contamination identified, the possibility of run on liquids becoming contaminated is a concern. TK-10-1 appears to not have been deactivated and isolated from source liquids that could add to the volume of the tank.

HNF-3208 Document Review: I observed no mention of 276-BA (ISO East Tank), 221-BB (BCP and BCS Tanks), and 221-BF (221-BF-A and 221-BF-B Tanks). There is no designation information for the waste in the five tanks in tables 1 through 4 or attachments A through O. On September 19, 2014, I provided a series of follow up questions regarding the designation records of the tanks in 276-BA, 221-BB, and 221-BF. DOE and CHPRC provided the following response on October 22, 2014.

“The DOE/RL-98-12 B Plant Preclosure Work Plan, Revision 2, provides process description for the various tank systems. The BB and BF tanks are part of the miscellaneous tank system found in §2.2.1.5 and Tables 2-2 and 2-3. The ISO East tank is part of the organic mixed waste system found in §2.2.1.4 and Tables 2-2 and 2-3. As noted in the end points document, vessels such as these with no liquids were characterized using estimates from process flow sheets. No applicable requirements for designation of legacy waste were identified in table 6-1 of the S&M Plan”

The Preclosure Work Plan §2.2.1.4 *Organic Mixed Waste Storage System* and §2.2.1.5 *Miscellaneous Tank Storage System* both provide process flow information regarding the tanks systems. Both sections refer to Table 2-2 and 2-3 in the Preclosure Work Plan. The following identifies process flow information under Table 2-2, for the five tanks located at 221-BB, 221-BF, and 276-BA.

Tank	Process Code	Process	Chemical Addition	Process Description
BCP	6	-Evaporator/ -De-entrainer	-NaOH -HNO ₃ -Citric acid	The purpose of the waste concentration process is to collect, blend, and neutralize process waste for volume reduction, and ammonia separation for waste transmittal to Double Shell Tank (DST) System.
BCS				
221-BF-A				
221-BF-B				
ISO-East	5	-Strontium recovery - Solvent extraction	-NaOH -Na ₂ CO ₃ -NaC ₆ O ₇ H ₄ (sodium gluconate) -HNO ₃ -HEDTA -EDTA (ethylenediamine tetraacetic acid) -Citric acid -ACOH (hydroxyacetic acetic acid) -TBP (tributylphosphate) -HDEHP (Diethylhexylphosphoic acid) -NPH (normal paraffin hydrocarbon)	Strontium is purified through a series of solvent extraction columns, scrubbed, and concentrated for encapsulation as strontium fluoride at WESF. The rare earth elements and calcium impurities are stripped from the organic stream and routed to DST System.

The following identifies process flow knowledge from the Preclosure Work Plan, under Table 2-3 for the five tanks located at 221-BB, 221-BF, and 276-BA.

Tank	Tank System	Process
BCP	Miscellaneous Tank Storage	<p><u>Specific ancillary equipment:</u> Various jumpers that lead from the vessel to the pipe connections within the 221-BB Building condensate pit.</p> <ul style="list-style-type: none"> • Transfer piping between BCP and <ul style="list-style-type: none"> - Cell 22 - Cell 23 - Cell 24 - 221-BF-A and 221-BF-B - 216-B-62 Crib and 216-B-64 Retention Basin via the BCS diverting pit.
BCS	Miscellaneous Tank Storage	<p><u>Specific ancillary equipment:</u> Various jumpers that lead from the vessel to the pipe connections within the 221-BB Building condensate pit.</p> <ul style="list-style-type: none"> • Transfer piping between BCS and <ul style="list-style-type: none"> - Cell 23 - Cell 24 - 221-B Building BCS header - 216-B-55 Crib and 216-B-64 Retention Basin via the BCS diverting pit.
221-BF-A	Miscellaneous Tank Storage	<p><u>Specific ancillary equipment:</u> Various jumpers that lead from the vessel to the pipe connections within the 221-BF Building effluent control pit.</p> <ul style="list-style-type: none"> • Overflow piping between 221-BF-A and 221-BF-B. • Transfer piping between 221-BF-A/221-BF-B and <ul style="list-style-type: none"> - BCP - 216-B-62 Crib - 216-B-64 Retention Basin via the BCS diverting pit.
221-BF-B	Miscellaneous Tank Storage	<p><u>Specific ancillary equipment:</u> Various jumpers that lead from the vessel to the pipe connections within the 221-BF Building effluent control pit.</p> <ul style="list-style-type: none"> • Overflow piping between 221-BF-A and 221-BF-B. • Transfer piping between 221-BF-A/221-BF-B and <ul style="list-style-type: none"> - BCP - 216-B-62 Crib - 216-B-64 Retention Basin via the BCS diverting pit.
ISO-East	Organic Mixed Waste Storage System	<p><u>Specific ancillary equipment:</u> None</p>

The Preclosure Work Plan goes on to identify under §3.3.5 *Miscellaneous Tank Storage System Process Summary* the following.

“The Miscellaneous Tank Storage System consisted of 21 tanks considered to have handled or contained dangerous waste after 1987. Twenty of these tanks were added to the B Plant Complex Part A, Permit Application, Form 3, in 1996. One of these tanks was added to the Part A, Form 3, in 1998. Following regulation, the primary process conducted in the Miscellaneous Tank Storage System was waste storage. The waste sources could include past operations (waste partitioning, pretreatment, WESF support) and heels left after tank flushing. These tanks were not necessarily connected.”

Although the five tanks in 276-BA, 221-BB, and 221-BF were not sampled and documented in HNF-3208 due to procedural criteria identified in the End Points Document, the Preclosure Work Plan provides process flow knowledge, including chemical additions. The contents of the five tanks identified in the Preclosure Work Plan, show the tanks came in contact with DW or MW.

HNF-3208 also identifies tank TK-2-1, which is not mentioned in the End Points Document, Preclosure Work Plan, S&M Plan, or the Part A Application. According HNF-3208, TK-2-1 (Located in Cell 2) is a 3,900 gallon tank with ~1,975 gallons (2,500 kilograms) of Duolite ARC-359 “spent resin from T-18-2.” HNF-3208 also references a material data safety sheet for “non-specified Duolite Resin.” According to the Preclosure Work Plan, T-18-2 in Cell 18 is a processing tower with a process code of 3. Code 3 is a “Primary Ion Exchange” process, which included the following chemical additions.

- Sodium Hydroxide
- Hydroxethyl Ethylenediamine Triacetic Acid
- Nitric Acid
- Ammonia
- Carbon Dioxide
- Duolite Resin

According the Preclosure Work Plan, the process description for T-18-2 is as follows, “This is the second step in the cesium purification process. The process consists of the addition of a chelating agent to prevent precipitation of iron and aluminum impurities and subsequent cation removal of cesium, sodium, and potassium by ion exchange.” According to HNF-3208, the reference documentation for T-18-2 is “Sample # S98B00059.” These references and descriptions stating the content of TK-2-1 is a spent resin; indicates that the tank is actively storing DW or MW.

On September 19, 2014, I provided a follow up question regarding the absence of TK-2-1 from the Part A Application. DOE and CHPRC provided the following response on October 22, 2014.

“TK-2-1 is located in cell 2 of the canyon and is included in the Containment Building portion of the Part A. It is not a process tank and is therefore not connected to in cell piping or included in the listing of tanks.”

The Preclosure Work Plan and Part A Application both state that the containment building holds solid MW. The solid MW is identified as failed canyon process equipment, jumpers, and isolated components, and lead used as weights, counterweights, or radioactive shielding. The lead shielding materials include lead blankets, lead sheets, lead bricks, and lead window glass. The material and shielding could be contaminated with residues from the processing of tank waste. Neither document

mentions the containment building housing a tank with ~1,975 gallons of "spent resin" from processing tower T-18-2. T-18-2 is identified in the Part A Application and the Preclosure Work Plan as containing MW. Tank TK-100 is located in the Containment Building, on the 221-B canyon deck, but TK-100 is identified in the Preclosure Work Plan and Part A Application as an individual vessel.

End Points Document Review: I observed no specific reference that links end point actions and criteria to specific RCRA or WAC 173-303 requirements for interim status standards or closure of the DWMUs. The End Points Document states the following under the introduction in Section III. "For each facility, the overall objective of transition is to achieve a safe, stable and environmentally sound condition, suitable for an extended period, as quickly and economically as possible. Once transitioned, the facility is kept in its stable condition by means of a methodical surveillance and maintenance (S&M) program, pending ultimate disposition."

The End Points Principles under Section IV of the End Points Document, states the following. "It is not known when or what the ultimate facility disposition will be. Therefore, end point decisions should not be driven by dispositioning presumptions. This does not preclude insightful decisions being made to prevent hindrance during the final dispositioning process."

The document describes task type (TT) definitions that appear not to be driven by a DW permit, interim status standards, or closure requirements (e.g. closure plan) for the B Plant Complex DWMUs. The task type definitions are driven by S&M phase operational requirements and cost. The definitions I observed lacked pointed requirements as addressed in WAC 173-303-280 through WAC 173-303-400 and 40 CFR Part 265 Subpart G (Closure and Post Closure) requirements. The task type definitions are in the End Points Document under Section V, *End Point Methodology*. The eight task types are as follows.

- TT-1 Hazards
- TT-2 Radiation Fields
- TT-3 Contamination
- TT-4 Waste
- TT-5 Isolate and Contain
- TT-6 Monitor and Control
- TT-7 Refurbish or Install
- TT-8 Document and Label

The End Points Document provides the following for criteria to complete individual end point actions. These action criteria are subsets to the task types and are assigned to individual building sections. I observed the following regarding the completion of actions in the End Points Document. The operators will present the action checklist to the "Transition Administration," which upon completion of an End Point, a Babcock & Wilcox Hanford Company (BWHC) field representative will initial complete on the field copy of the End Points Document. A Bechtel Hanford Inc. (BHI) field representative will then verify acceptable completion of the applicable activity. Verification may be performed by review of documents, letters, photo's, work packages, work plans, or visually. When all the End Points for a specific area of the facility have been completed and verified, designated BWHC Management along with BHI Management will sign completion and acceptance of that area.

These end point actions, verifications, and transition procedures ensure that the facility is prepared for the S&M phase. I observed no mention of an Independent Qualified Registered Professional Engineer (IQRPE) certifying actions associated with the DWMUs for closure.

The following information from the End Points Document show the building sections within the DWMUs, which are assigned end point actions.

Case 2 for Internal Spaces, No Access Expected Section

- 221-B Canyon & Deck
- 221-B Canyon Cell 4
- 221-B Cell 40
- 221-B Rail Road Tunnel
- 221-BB Steam Condensate (BCS) Building
- 221-BF Process Condensate (BCP) Storage Building

Case 3 for External Spaces, Including Building Exterior Envelopes

- Organic Storage Tanks
- 221-B Facility Exterior
- 221-BB Steam Condensate (BCS) Building Exterior
- 221-BF Process Condensate (BCP) Storage Building Exterior

Case 5 for System – Mothballed

- 221-B Canyon Crane

Case 6 for System – Abandoned in Place

- 221-B Cell 5 through 14 Vessels
- 221-B Cell 17 through 39 Vessels
- 221-BB Steam Condensate (BCS) Building System
- 221-BB Vessels
- 221-BF Process Condensate (BCP) Storage Building System
- 221-BF Vessels

The following are specific end point actions taken for cases 2, 3, 5, and 6 identified above. I have documented below only the actions with objectives to “comply with regulations and requirements” for the DWMUs (Case 2, 3, 5, and 6).

Case 2 for Internal Spaces, No Access Expected Section

- (TT-1) Document compliance with Confined Space Entry in accordance with WHC-CM-4-40, Industrial Hygiene Manual, Section 3.1, Revision 1 [Reference End Point Technical Information (EPTI) #3] for inclusion in the turnover package.

- (TT-1) Document compliance with the Asbestos Control Program as defined in WHC-CM-4-40, Industrial Hygiene Manual, Section 2.3, Revision 0 (Reference EPTI #2) for inclusion in the turnover package.
- (TT-1) Document compliance with the Hazardous Communication Program as defined in WHC-CM-4-40, Industrial Hygiene Manual, Section 2.1, Revision 0 (Reference EPTI #1) for inclusion in the turnover package.
- (TT-1) Fire protection/detection will be determined in the Fire Hazard Analysis.
- (TT-2) Post radiological conditions in accordance with Hanford Site Radiological Control Manual (HSRCM-1), Chapter 2, Revision 2 (Reference EPTI #4).
- (TT-2) Remove temporary radiological areas.
- (TT-3) Post radiological conditions in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4).
- (TT-4) Remove emergency lantern batteries and fire extinguishers.
- (TT-4) Remove/dispose of radioactive, dangerous, and mixed wastes in accordance with approved waste handling procedures.
- (TT-8) Document amount and location of remaining hazardous substances/dangerous waste.
- (TT-8) Document space and associated system(s) dose rates and contamination levels in the final radiological survey report and map per HSRCM-1, Chapter 5, Revision 2 (Reference EPTI #5) for inclusion in the turnover package.

Case 3 for External Spaces, Including Building Exterior Envelopes

- (TT-1) Document compliance with Confined Space Entry in accordance with WHC-CM-4-40, Industrial Hygiene Manual, Section 3.1, Revision 1 (Reference EPTI #3) for inclusion in the turnover package.
- (TT-1) Document compliance with the Asbestos Control Program as defined in WHC-CM-4-40, Industrial Hygiene Manual, Section 2.3, Revision 0 (Reference EPTI #2) for inclusion in the turnover package.
- (TT-1) Document compliance with the Hazardous Communication Program as defined in WHC-CM-4-40, Industrial Hygiene Manual, Section 2.1, Revision 0 (Reference EPTI #1) for inclusion in the turnover package.
- (TT-1) Fire protection/detection will be determined in the Fire Hazard Analysis.
- (TT-2) Post radiological conditions in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4).
- (TT-2) Remove temporary radiological areas.
- (TT-3) Post radiological conditions in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4).
- (TT-4) Remove emergency lantern batteries and fire extinguishers.
- (TT-4) Remove/dispose of radioactive, dangerous, and mixed wastes in accordance with approved waste handling procedures.

- (TT-5) "See - Protect Public & Environment". Ensure engineered barriers/seals are in place for vermin control and to prevent migration of both hazardous and radioactive contamination to the environment.
- (TT-8) Document amount and location of remaining hazardous substances/dangerous waste.
- (TT-8) Document space and associated system(s) dose rates and contamination levels in the final radiological survey report and map per HSRCM-1, Chapter 5, Revision 2 (Reference EPTI #5) for inclusion in the turnover package.

Case 5 for System – Mothballed

- (TT-2) Radiological conditions are posted in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4) in Spaces where systems reside.
- (TT-3) Radiological conditions are posted in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4) in Spaces where systems reside.
- (TT-4) Remove/dispose of radioactive, dangerous, and mixed wastes in accordance with approved waste handling procedures.
- (TT-8) Document amount and location of remaining hazardous substances/dangerous waste.

Case 6 for System – Abandoned in Place

- (TT-2) Radiological conditions are posted in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4) in Spaces where systems reside.
- (TT-3) Radiological conditions are posted in accordance with HSRCM-1, Chapter 2, Revision 2 (Reference EPTI #4) in Spaces where systems reside.
- (TT-4) Remove/dispose of radioactive, dangerous, and mixed wastes in accordance with approved waste handling procedures.
- (TT-4) A table listing each tank with any flush and sampling requirements is attached. Specific tank listings are in Level III specific system requirements.
- (TT-8) Document amount and location of remaining hazardous substances/dangerous waste.

Task Type 1 actions (listed above) refer to "WHC-CM-4-40, Industrial Hygiene Manual" and Fire Hazard Analysis criteria for completion. Task Type 2 and Task Type 3 actions (listed above) refer to the "Hanford Site Radiological Control Manual" criteria for completion. Task Type 4 actions (listed above) refer to unspecified "Waste Handling Procedures" for removal and disposal criteria for completion. Task Type 4 actions made no mention of removal and disposition criteria in accordance with a closure plan. Task Type 5 actions (listed above) refer to the "Protect Public & Environment" objectives under the same case section and provided no specific instructions, other than to "Ensure engineered barriers/seals are in place" to prevent hazardous and radioactive contamination from entering the environment. Task Type 8 actions (listed above) refer to the "Hanford Site Radiological Control Manual" and the general instruction to "Document amount and location of remaining hazardous substances/dangerous waste" criteria for completion. The End Points Document appears to not address all of the requirements associated with the interim status standards or closure requirements for the DWMUs.

The majority of the End Points Document is checklists that divide into hierarchy of cases, buildings, and sections. Each checklist is then assigned the objectives, task types, and end point criteria/action. Each criteria/action is assigned a number (e.g. 04.01.01), a priority code (Key can be found in End Points Document on page 21), and a section labeled "EP Closure." The "EP Closure" section provides signature blocks for the BWHC and BHI representatives, a date block and "End Point Revision Number" block. I observed no indication that the BWHC or BHI representatives are IQRPEs. The checklists show completed actions with the word "Signed" in the BWHC and BHI signature blocks, a date of completion, and a revision number. I observed no actual signatures throughout the 922 pages of checklists. I also observed that some objectives and end points criteria are not indicated with the word "Signed" and have no date documented.

04.34.02	Comply with Regulations & Requirements	*◆	Flush/drain chemical addition piping to minimize the residual material using existing equipment configuration. Ref: _____ _____	BWHC: Signed
				BHI: Signed
				Date: 4/11/97
				End Point Revision number: 0

Excerpt 8: End Points Document, From Page 263 of 922

One example of missing signatures and the date can be found under the "221-B Canyon & Deck, Case: (2) Internal Spaces, No Access Expected," on page 214 of 922, number 04.01.08, shown below. This same instance is observed numerous times under Case 2 sections for the 221-B building and Case 3 sections for the "Organic Storage Tanks."

04.01.08	Comply with Regulations & Requirements	*◆	Removed/disposed radioactive, dangerous, and mixed waste conducted in accordance with approved waste handling procedures. Ref: _____ _____	BWHC:
				BHI:
				Date:
				End Point Revision number: 0

Excerpt 9: End Points Document, From Page 214 of 922

Preclosure Work Plan Review: There are four sections of the Preclosure Work Plan I have document below. Previous sections were reviewed and documented earlier in this report.

DOE and CHPRC provided the following on October 22, 2014, regarding my follow up closure questions.

"A final closure plan has not yet been submitted to Ecology for approval. One will be submitted at the beginning of the TPA Action Plan Section 8.0 disposition phase, as described below. DOE and CHPRC will implement the process described in the B Plant Preclosure Work Plan, DOE/RL-98-12, Revision 2. The pre-closure work plan is a TPA primary document that was approved by Ecology on September 21, 1999, and thus was incorporated into the enforceable text of the TPA, in accordance with Ecology's authority issue regulatory orders under RCW

70.105.095 (TPA Section 3). The approved pre-closure work plan specifies that "The closure plan for the TSD unit will not be prepared until the Disposition Phase of the facility decommissioning process is initiated, which follows the long-term S&M Phase." (Section 1.0). Additionally, Section 6.1 states "The closure strategies, closure performance standards, and closure activities will be developed and documented within the closure plan during the Disposition Phase." This approach is consistent with the B Plant Complex closure conditions contained in draft Rev. 9 of the Hanford Facility RCRA Permit. Initiation of the disposition phase is pending."

Section 5 of the Preclosure Work Plan addresses the contamination of soil and groundwater at the B Plant Complex. The section states the following regarding contamination concerns.

"As noted in Section 2.0, the secondary containment system for the 221-B Building has several potential pathways for either RCRA dangerous waste and for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 hazardous substances to have entered the soils under the B Plant Complex released, the CERCLA hazardous substances would have originated from B Plant Operations before August 1987 and the RCRA dangerous waste would have originated from operations conducted after August 1987. It is not known how much or if any RCRA dangerous waste or CERCLA hazardous substances might have entered the soil. It is not known to what degree, if any, that the B Plant Complex has affected the groundwater in the 200 East Area. The final closure activities for the B Plant TSD unit and the decontamination and decommissioning activities performed will need to determine if any contamination occurred from a RCRA dangerous waste or a CERCLA hazardous substance in the soil surrounding the 221-B Building.

Although the possibility that DW or MW is present in the groundwater is unknown, DOE defers to a CERCLA RI/FS process associated with 200-PO-1. Section 5 states the following regarding the extent of contamination investigated.

"In accordance with the Tri-Party Agreement (Ecology et al. 1996), groundwater in the 200 East Area will be included in the 200-PO-1 operable unit and will be investigated under the CERCLA remedial investigation/ feasibility study process. Therefore, groundwater investigation/ remediation is not addressed as part of this preclosure work plan. Work on the 200-PO-1 operable unit will be coordinated with the final disposition process but will not occur until the final groundwater operable unit work plan has been approved."

Details regarding the extent of contamination to soil and groundwater are most recently addressed in the August 21, 2014 *Hanford Site Groundwater Monitoring Report for 2013, DOE/RL-2014-32, Revision 0*. The contamination attributed to the B Plant Complex's practices can be found in sections addressing 200-BP and 200-PO.

Section 6 of the Preclosure Work Plan outlines the overall closure strategy and performance standards to be addressed during closure activities. The following is stated in §6.1, "The closure strategies, closure performance standards, and closure activities will be developed and documented within the closure plan during the Disposition Phase."

§6.4 addresses closure of DWMUs, with the development of the closure plan, as stated below.

“The closure plan will meet the regulatory requirements of WAC 173-303-610 and follow the Tri-Party Agreement requirements in Chapters 6.0, 8.0, and 9.0. Other applicable regulations and guidance will be used as appropriate. Other site actions, such as the Canyon Deactivation Initiative, also are expected to have an affect on closure plan development.”

Under Section 8 of the HFFACO the status is identified as the following.

“Final disposition to be addressed using CERCLA remedial action coordinated with RCRA closure. Completion schedules to be established with the RI/FS Work Plans and RD/RA Work Plans in accordance with Action Plan §11.6 (M-85 milestones).”

Under interim status standards closure requirements for DWMUs are driven by 40 CFR Part 265 Subpart G – Closure and Post-Closure, as incorporated by reference in WAC 173-303-400(3)(a). The RI/FS Work Plans and RD/RA Work Plans are driven by CERCLA remedial action requirements. As stated in Section 8 of the HFFACO, CERCLA remedial action and RCRA closure must coordinate final disposition. This does not state that RCRA closure requirements and CERCLA remedial actions must take place simultaneously or on a similar timeline. The only actions that are tied to a timeline under the HFFACO are the completion of the RI/FS and RD/RA work plans. This timeline is addressed in the M-085 milestones, which doesn't mention RCRA closure or a closure plan. Time critical closure requirements under Subpart G, are driven by the last receipt of waste and closure plan approval for DWMUs.

Under Subpart G, §265.110, the closure requirements that apply the DWMUs are §265.111 through §265.115. The closure performance standards that apply to DWMUs are the following under §265.111.

“The owner or operator must close the facility in a manner that: (a) Minimizes the need for further maintenance, and (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground or surface waters or to the atmosphere, and (c) Complies with the closure requirements of this subpart, including, but not limited to, the requirements of §§265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.381, 265.404, and 265.1102.”

These requirements and performance standards are to be addressed in a written closure plan. §265.112 identifies the requirements of DOE and CHPRC to have a written closure plan available and maintained. The subsection goes on to list the contents of the closure plan and the requirements for amending the plan as needed. The subsection also provides requirements regarding when notification of partial closure and final closure need to be submitted to Ecology. Finally, this subsection identifies requirements for removal of wastes and decontamination or dismantling of equipment.

Once notification and/or an approved closure plan are in place for the DWMUs, §265.113 identifies the requirements of DOE and CHPRC during closure and the time allowed for closure to take place. The time allowed for partial or final closure are contingent on the last receipt of DW, non-DW, or after the

approval of a closure plan. This time period may be extended by Ecology if DOE and CHPRC meet applicable requirements under this section.

The final two subsections identify the requirements DOE and CHPRC must take during and after closure is complete. §265.114 goes on to address the disposal or decontamination of equipment, structures and soils during the partial and final closure periods, unless specified otherwise in §§265.197, 265.228, 265.258, 265.280, or 265.310. The subsection also addresses generator requirements that may apply during disposal and decontamination. §265.115 addresses the requirements for a certification of closure. The subsection provides a timeline for the owner or operator to submit certification of closure for each "dangerous waste management unit," to Ecology. The subsection also provides requirements regarding the certification of closure, such as the submission of supporting documentation and that an IQRPE must review for completion in accordance with the closure plan.

§6.5 of the Preclosure Work Plan indicates the possibility of DW remaining in place after closure activities have been completed. The document states "Any postclosure care requirements will be defined within the closure plan." These applicable requirements are identified under §265.110(b), which states the following.

"Sections 265.116 through 265.120 (which concern post-closure care) apply to the owners and operators of: (1) All dangerous waste disposal facilities; (2) Waste piles and surface impoundments for which the owner or operator intends to remove the wastes at closure to the extent that these sections are made applicable to such facilities in §265.228 or §265.258; (3) Tank systems that are required under §265.197 to meet requirements for landfills; and (4) Containment buildings that are required under §265.1102 to meet the requirement for landfills."

The complexities and risks associated with 221-B missions (Plutonium, Cesium, and Strontium recovery) created circumstances where DOE, EPA, and Ecology had come to an agreement regarding the disposition path forward for the 221-B canyon building. Section 8 of the HFFACO outlines this disposition process, with the following under §8.1.1 regarding the conception of the process.

"The purpose of Section 8.0 was to establish a process that coordinated the requirements of DOE's decommissioning processes with the requirements of environmental regulations, such as RCRA and CERCLA, as they relate to disposition of facilities. As part of this effort, the parties identified 'Key' facilities, or those that were determined to present sufficient potential environmental concern that coordination of the decommissioning process with cleanup activities under the Tri-Party Agreement was deemed necessary."

The next section of the Preclosure Work Plan identifies actions taken prior to the S&M phase and the DWMUs current status of compliance or noncompliance with RCRA requirements. According to DOE indications of noncompliance are due to the complexities, risks, and status associated with the DWMUs.

Section 7 of the Preclosure Work Plan outlines decommissioning activities that took place during the transition phase, in preparation of the S&M phase. The section also outlines compliance with interim status standards at the end of the transition phase. If the applicable sections of the DWMUs would not meet the interim status standards, DOE provided a justification for noncompliance. The criteria for

actions taken were established in the End Points Document and not driven by a closure plan and closure requirements. The following is stated in the Section 7 introduction.

“This chapter describes the closure activities implemented during the transition phase. The primary objective of the transition phase activities was to place the B Plant Complex in a safe configuration with respect to human health and the environment. A secondary objective was to close the TSD unit to the greatest extent possible. Activities required to achieve final closure will be documented in a closure plan implemented during the disposition phase and in conjunction with the overall facility disposition.”

The major activities that took place in the DWMUs during the transition phase included the isolation of vessels, identifying vessels “emptied before October 5, 1995,” disposition of the organic MW, closure of the ISO-West tank in 276-BA, and isolating WESF from the B Plant Complex by closing tank TK-100.

The isolation of all 55 vessels was the main activity that took place during the transition phase. The isolation of these tanks are identified as follows under §7.1.1.

“Isolation involved removing selected jumpers connecting each treatment and/or storage vessels to other vessels or liquid sources outside the B Plant canyon (e.g., DST System, chemical addition tanks, water lines, etc.) and installing blanks to prevent liquids from reaching the tanks. In addition, other jumpers (electrical, steam, water, chemical addition, and/or instruments) were removed, as necessary, to isolate the treatment and/or storage vessels.”

The documentation for isolating all vessels is identified as task type 5 in the End Points Document. After observing the End Points Document, it is unclear if each individual vessel was isolated or if isolation only occurred at connections to source liquids (e.g. DST, chemical addition tanks). Tank TK-10-1 also appears to have not been isolated, according to the Preclosure Work Plan and S&M plan.

The identification of vessels emptied before the decommissioning of the B Plant Complex are documented in the Preclosure Work Plan under §7.1.2. The document states that all ten of the Neutralized Current Acid Waste Treatment and Storage System vessels are empty. The document also says three out of twenty Miscellaneous Storage Tank System vessels are empty and one out of eight Low-Level Waste Treatment & Storage Systems vessels are empty. The status of these tanks are documented in the HNF-3208 and the Preclosure Work Plan as empty, dry, and flushed, with a volume of zero.

The bulk of the organic MW disposition was driven by HFFACO Milestone M-32-07. According to the Preclosure Work Plan, approximately 15,242 liters remain in seven out of nine organic tank system vessels. Two of the vessels, TK-28-4 and ISO-East were documented as empty and dry, with no heel or residue.

The closure and disposition of the ISO-West vessel was completed under “administrative closure,” as documented in the Preclosure Work Plan, under §7.1.4.

“To support the administrative closure, an administrative closure technical data synopsis (98-EAP-135) for the ISO West tank was prepared and submitted to Ecology on March 4, 1998

(Appendix B). The synopsis and the supporting documentation show that, during operations in the 276-BA Facility, the ISO West tank did not, at any time, manage, store, or contact dangerous or mixed waste. Closure was accepted by Ecology (Ecology 1998a)."

The ISO-West vessel was transferred to WESF to manage low level radioactive waste.

The closure and disposition of TK-100 vessel, the vault housing TK-100, and ancillary piping was completed under a closure plan with a closure certification. The process is documented in the Preclosure Work Plan under §7.1.5.

"The B Plant Complex Transition Phase activities and decoupling WESF from the B Plant Complex included the closure of the WESF LLW Collection Tank (TK-100) System. The TK-100 System consists of 3 components: TK-100, the vault housing TK-100, and the piping within the 224-B Building that drained into TK-100. Although the TK-100 System had been managed as a LLW system not subject to the requirements of the RCRA, it was determined in early 1998 that the system had been storing mixed waste. Therefore, the TK-100 System was closed in accordance with the requirements in WAC 173-303-610. This included preparing and submitting a closure plan for the TK-100 System (98-EAP-494). The closure plan was subsequently approved by Ecology (Ecology 1998b) and the closure certifications submitted to Ecology in November 1998 (98-EAP-588). The vault and the piping were clean closed and will continue to support LLW management at WESF. Both the vault and the piping are integral to the 225-B Building. The closure performance standard for TK-100 was to move the tank into the B Plant Complex."

TK-100 was stored in the 221-B canyon, on the deck. The tank approximately has a volume of 1,700 liters remaining, according to the Preclosure Work Plan.

Since the transition phase was not meant for final closure of the DWMUs, DOE has addressed issues regarding interim status standards and closure requirements in the Preclosure Work Plan. DOE documented in §7.4 justifications to why certain interim status standards would not be met during the S&M phase. Under WAC 173-303-400(1), interim status standards are established, which define the acceptable management until certification of final closure or post-closure responsibilities are fulfilled. The Preclosure Work Plan infers that certain requirements cannot or are not required for tank systems 54 remaining vessels, containers (Seven containers in Cell 4), and the Containment Building. The noncompliance justifications are as follows.

Tank Systems: Below are the documented requirements DOE and CHPRC have identified as needing justification and alternative compliance requirements. However, I observed most of the requirements below only have justifications and not alternative compliance requirements.

Requirement: Daily visual inspections of aboveground tank systems WAC 173-303-640(6)(b).

- Noncompliance Justification (53 of 54 vessels): Inspection requirements will not be performed as the vessels are empty, inactive, and isolated. Also, these vessels are inaccessible to personnel during the S&M phase.

- Noncompliance Justification (ISO-East vessel): Inspection is not needed as the tank is inactive, empty, and isolated.

According to the Preclosure Work Plan, 53 of 54 vessels criteria for inspections are established in the S&M Plan. According to the S&M Plan inspections of the TSD Unit will not be conducted. For the ISO-East vessel, inspections are not required according to the Preclosure Work Plan. Both justifications state that the vessels are empty, inactive, and isolated. The Preclosure Work Plan references WAC 173-303-640(6)(b), but under interim status standards, standards for inspections of tanks are addressed under 40 CFR Part 265.195 as incorporated by reference in WAC 173-303-400(3)(a). The Preclosure Work Plan also states that all vessels are empty, which is discrepant with what is described as empty in §1.1, §4.2, and Table 4-2. §1.1 outlined criteria for including vessels in the Part A Application and provides insight into empty versus not empty.

“Any canyon tanks or vessels that treated or stored dangerous or mixed waste [including listed mixed waste from the Double-Shell Tank System (DOE/RL 90-39)] on or after August 1987. The tank or vessel could contain a heel or could be dry and empty.”

“A 'minimum heel' is defined as the liquid remaining after the tank or vessel had been emptied to the greatest extent possible using the existing liquid transfer equipment (generally steam jets).”

In §4.2 and Table 4-2, the term empty is used numerous times to describe these vessels. Each time the term “empty” is used, it is followed by a quantitative or qualitative description of what empty means in each particular vessel.

- “...empty and do not contain a tank heel.”
- “...empty and do not contain a tank heel but are known to contain waste residue in the form of solids or a sludge in the bottom of the tanks.”
- “empty and does not contain a heel but is known to contain dry solids.”
- “Empty and below minimum heel.”
- “Empty and dry.”
- “Empty and below minimum heel. Volume of residue is about 745 liters”
- “Empty and below minimum heel. Large amount of waste residue (solids/ sludge) present is increasing the heel volume. Volume of residue is not known.”
- “Empty and below minimum heel; contains an unknown amount of ion exchange resin.”
- “Empty and dry with waste residue (solids/sludge) present. Volume of residue is about 167 liters.”
- “Empty and dry with waste residue (solids/sludge) present. Volume of residue is not known. Residue is known to be about 1 meter thick on bottom of vessel.”

I did not observe a definition of “empty” in any of the documents I reviewed. DW or MW remaining in any particular vessel ranges from “None” to 7,972 liters, with 29 of 54 vessels reported as having volumes in Table 4-2 of the Preclosure Work Plan. Under 40 CFR Part 265.195, vessels and their ancillary equipment must be inspected each operating day. The term “each operating day” is clarified under an EPA, September 2005 Guidance Document, *Introduction to Tanks (40 CFR Parts 264/265,*

Subpart J) Solid Waste and Emergency Response, (5305W), EPA530-K-05-018. On page 12, under Table 1: "EPA has clarified that 'each operating day' has been defined as 'every day the tank is in operation (i.e., storing or treating hazardous waste) and not necessarily just on days the facility is open for business.'" This would require DOE and CHPRC to conduct inspections "each operating day" for those vessels which continue to store DW or MW. Especially for the five tanks accessible outside of the 221-B canyon building, in 221-BB, 221-BF, and 276-BA.

According to various B Plant Complex documents, 221-B canyon vessels and the cells they are housed in are inaccessible, due to concrete blocks, which can only be moved by a crane that was deactivated before the S&M phase. DOE and CHPRC have provided sufficient justification that demonstrates the isolation of the canyon cells and vessels creates difficult circumstances to complete inspections "each operating day." *DOE and CHPRC have not clearly demonstrated why the five tanks and structures 221-BB, 221-BF, and 276-BA are not accessible and not subject to 40 CFR Part 265.195 requirements.*

Requirement: Annual integrity test of tank systems without compliant secondary containment WAC 173-303-640(4)(i).

- Noncompliance Justification (53 of 54 vessels): Annual integrity tests will not be performed as the vessels are inactive, empty, and isolated.
- Noncompliance Justification (ISO-East vessel): The 276-BA Facility has compliant secondary containment. The ISO East tank is inactive, empty, and isolated.

According to the Preclosure Work Plan, 53 of 54 vessels will follow the "Compliance measure: Surveillance will be in accordance with the S&M Plan." The S&M Plan does not mention WAC 173-303-640 or an alternative compliance measure in place of an annual integrity test. The Preclosure Work Plan references WAC 173-303-640(4)(i), but under interim status standards, standards for assessments are referenced under 40 CFR Part 265.191 as incorporated by reference in WAC 173-303-400(3)(a). The Preclosure Work Plan also states the ISO-East vessel annual integrity test is not required.

I did not observe documentation that DOE and CHPRC justified compliant secondary containment meeting the requirements of 40 CFR Part 265.193 for 53 of 54 vessels. The Preclosure Work Plan states that secondary containment may have several pathways for DW or MW to enter the soil. As stated before, the 221-B canyon vessels and the cells (secondary containment) are inaccessible, due to concrete blocks, which can only be moved by a deactivated crane. This could limit the access to ensure the compliance with 40 CFR Part 265.193 for the secondary containment, or otherwise conduct integrity assessments. DOE and CHPRC have not clearly demonstrated why the five tanks located at 221-BB, 276-BA, and 221-BF are not accessible and not subject to 40 CFR Part 265 Subpart J requirements.

Requirement: Secondary containment and leak detection [WAC 173-303-640(4)].

- Noncompliance Justification (52 of 54 vessels): No upgrades to the secondary containment or leak detection equipment will be made as the vessels are inactive, empty, and isolated.
- Noncompliance Justification (ISO-East vessel): No upgrades to the secondary containment or leak detection equipment will be performed. The ISO East tank is inactive, empty, and isolated.

According to the Preclosure Work Plan, 52 of 54 vessels will follow the stated guidance; "S&M to meet leak detection requirements will be in accordance with the S&M Plan." The S&M Plan does not

mention WAC 173-303-640 or a compliance measure in place of secondary containment and leak detection. Also according to the Preclosure Work Plan the ISO-East vessel, secondary containment and leak detection is not required. I also observed that tank TK-29-4 (1 out of 54 vessels) is missing from this justification. The Preclosure Work Plan references WAC 173-303-640(4), but under interim status standards, standards for secondary containment and leak detection are referenced under 40 CFR Part 265.193 as incorporated by reference in WAC 173-303-400(3)(a).

I did not observe documentation that DOE and CHPRC justified that 53 of 54 vessels have compliant secondary containment. The Preclosure Work Plan states that secondary containment may have several pathways for DW or MW to enter the soil as described under Section 5. The 221-B canyon vessels and the cells (secondary containment) are inaccessible, due to concrete blocks, which can only be moved by a deactivated crane. This could limit access to ensure secondary containment and leak detection are sufficient or updated. The vessels in 221-B also appear to be isolated from liquid sources (e.g. double shell tanks and chemical feed tanks), according to the Preclosure Work Plan. *DOE and CHPRC have not clearly demonstrated why the five tanks located at 221-BB, 276-BA and 221-BF are not accessible and not subject to 40 CFR Part 265.193 requirements.*

Requirement: Major risk labeling of tank systems [(WAC 173-303-400(3)(a)(iii) and WAC 173-303-640(5)(d)].

- Noncompliance Justification (48 of 54 vessels): No labeling will be performed as the vessels in the canyon cells are inaccessible to personnel during the S&M phase.

For 48 of 54 vessels, the Preclosure Work Plan, states that "Major risks (i.e., hazards) for the canyon vessels are documented in Chapter 4.0, Section 4.2." This justification fails to mention the five tanks in 221-BB, 221-BF, 276-BA, and tank TK-100. According to the Preclosure Work Plan, these six tanks contain a volume or are contaminated with DW or MW. All six of these tanks are on the Part A Application for past practices associated with DW or MW. TK-100 along with the 48 other vessels are inaccessible and within 221-B canyon. The five tanks in 221-BB, 221-BF, and 276-BA are outside of the canyon. ISO-East at 276-BA is above ground and visible through a chain link fence. BCP, BCS, 221-BF-A, and 221-BF-B are located at 221-BB and 221-BF and are below grade tanks accessible from a structure above ground.

DOE and CHPRC has not justified why 5 of 54 vessels cannot have compliant major risk labeling. DOE and CHPRC have not clearly demonstrated that the 5 tanks located at 221-BB, 221-BF, and 276-BA are not accessible and in turn not subject to WAC 173-303-640(5)(d) requirements.

Cell 4: The Preclosure Work Plan identifies the two following requirements in need of justification for non-compliance: "Major risk labeling of containers systems WAC 173-303-640(3)" and "Weekly inspection of containers [WAC 173-303-320(2) and WAC 173-303-630(6)]." The first reference of WAC 173-303-640(3), is incorrect and should reference WAC 173-303-630(3), which is required under interim status standards. Cell 4 is in the 221-B canyon and is inaccessible, due to the concrete block, which can only be moved by a deactivated crane. This could limit the access to ensure that labeling and weekly inspections are conducted. *DOE and CHPRC have provided sufficient information in regards to the major risk of the seven containers in Cell 4. Details regarding the MW contents can be found in HNF-3208 and the Preclosure Plan.*

Section 8 of the Preclosure Work Plan provides description of post closure actions as follows. "If waste is left in place, a postclosure plan will be developed to address the disposition scenarios. Groundwater contamination will be investigated and remediated through the operable units under the CERCLA remedial investigation/feasibility study process as directed by the Tri-Party Agreement." Since DOE and CHPRC have not developed or completed requirements regarding a closure plan and applicable closure standards, the post closure responsibilities of the owner and operator have not been developed.

Surveillance & Maintenance Plan Review: The review of the S&M Plan and the applicable sections focused on interim status standards and closure requirements.

The S&M Plan is identified under Section 8, Table 8-1 of the HFFACO. The introduction of the S&M Plan states the following.

"This document provides the plan for the surveillance and maintenance (S&M) phase of the B Plant Facility (B Plant). This plan has been prepared in accordance with the Tri-Party Agreement, Attachment 2 (Tri-Party Agreement Action Plan), Section 8.6, "Surveillance and Maintenance Phase" and will remain in effect until the Remedial Design/Remedial Action Work Plan has been approved..."

Section 8.6 and numerous other sections under Section 8 of the HFFACO were removed, while other information was added. The changes were documented on March 18, 2010, in the "Federal Facility Agreement and Consent Order Change Control Form" (Change Number P-00-09-02). The latest revision of the S&M Plan was published January 2008. This appears to be the reason why the S&M Plan refers to subsection in the HFFACO that no longer exist.

The justifications for the changes in the HFFACO were driven by the completion of the transition phase for the Key Facilities. The following is stated in the change package.

"The designated Key Facilities have completed the transition from operations to the surveillance and maintenance or disposition phases. In the accompanying change packages, the regulatory disposition path has been set for the canyon facilities, the last remaining Key facilities that previously were without a path forward. As a result, the processes described in Section 8.0 are no longer applicable."

Not only does the change remove processes that were no longer applicable, the changes clarify the disposition path forward with the following.

"This change package describes the regulatory path forward for disposition of the canyons using established CERCLA remedial action and RCRA closure processes. The change package also defines the process for disposition of other facilities using a graded approach and CERCLA response actions as needed."

This justification for changes identifies the canyons as the primary purpose for CERCLA and RCRA coordination. I did not observe in the change package or Section 8 of the HFFACO a description that CERCLA (RI/FS) and RCRA (closure plan) disposition actions need to take place simultaneously or that one action must take place before the other. The documents that need to be submitted for final

disposition are addressed in milestones for the RI/FS and RCRA for the closure plan. Also under the current Table 8-1 of the HFFACO, I observed the term "Canyon Buildings" above the row that provides the status of the B Plant Complex canyon. This indicates that there are other applicable requirements for those sections of the DWMUs that reside outside of the canyon. Currently there are five structures (221-BB, 221-BF, and 276-BA) that reside outside of the canyon that have been isolated from their previous connections to the DWMUs in the canyon.

The following is the second half of the introduction for the S&M Plan.

"...The objectives of the S&M phase are to ensure adequate containment of any contaminants left in place and to provide physical safety and security controls and to maintain the facility in a manner that will minimize risk to human health or the environment. S&M plans are prepared by U.S. Department of Energy (DOE), Richland Operations Office (RL) and detail facility aspects and associated requirements including the following: (1) surveillance, (2) maintenance, (3) quality assurance, (4) radiological controls, (5) hazardous substance inventory, management and protection, (6) health and safety/emergency preparedness, (7) safeguards and security, (8) cost and schedule, and (9) environmental compliance...The enforceable requirements in this document are found in Table 6-1; other dialogue and descriptions are for informational purposes only."

The introduction details that environmental compliance is applicable and that Table 6-1 of the S&M Plan identifies the enforceable requirements. The introduction also states that other sections are strictly informational.

Table 6-1 of the S&M Plan documents a series of federal and state regulations that apply to the B Plant Complex DWMUs. The current status and management practices of the DWMUs have been framed by the following. (1) Part A Application, (2) Section 8 of the HFFACO, (3) the End Points Document, (4) HNF-3208, (5) The Preclosure Work Plan, and (6) the S&M Plan. The deactivation work has been developed and documented in these various documents. The waste, complexities, risks, and the hybrid path forward for the B Plant Complex have led DOE and CHPRC to identify which requirements are applicable, whether they can reasonably meet them, and if not, provide a justification and alternative compliant action. The requirements for the DWMUs are under WAC 173-303-280 through WAC 173-303-400. The following are discrepancies I observed under Table 6-1 of the S&M Plan.

DW REGULATIONS	S&M COMPLIANCE APPLICABILITY
Notice of Intent WAC 173-303-280 Siting Criteria WAC 173-303-282	Not applicable during the B Plant S&M phase.
General Inspection WAC 173-303-320	Routine Surveillances are performed as identified in this S&M plan. No TSD unit inspections or surveillances are performed since all of the TSD units are in un-accessible portions of the B Plant Complex.
Interim Status Treatment, Storage, and Disposal Facility Standards: <ul style="list-style-type: none"> • WAC 173-303-400 • 40 CPR 265.1101(c)(4) • 40 CFR 255 Subpart J • B Plant Complex RCRA Part A Permit Application 	<p>Tank Systems</p> <p>During the B Plant deactivation, TSD tanks and vessels identified in the B Plant Complex Part A Permit Application were emptied to the practical and reasonable extent possible with existing plant systems. These tank systems are identified as the:</p> <ul style="list-style-type: none"> • Neutralized Current Acid Waste Treatment and Storage System (NCAW). • Low-Level Waste (LLW) Treatment and Storage System.

	<ul style="list-style-type: none">• LLW Concentrator.• Organic Mixed Waste Storage.• Miscellaneous Tanks Storage System. <p>The solutions in the 221-B canyon tanks and vessels were characterized in accordance with the Sample and Analysis Plan for B Plant Solutions, and transferred to the tank farms Double-Shell Tanks for long-term storage. Solutions in the Organic Solvent Waste storage tanks located outside of the 221-B Building were sent off site as part of the B Plant deactivation. Removal of the dangerous waste solutions ensured that the vessels will be left in a state of minimum surveillance and maintenance until subsequent closure. Therefore, during the B Plant S&M phase, no surveillance of the dangerous waste units or ancillary equipment will be performed.</p> <p>Cell 4 Container Storage</p> <p>The B Plant 221-B canyon Cell 4 will continue to store dangerous waste in containers per the B Plant Part A Permit Application during the S&M phase . Because the waste does not contain any free liquids, and because the access to the containers is remote, and the canyon crane will be unavailable, no surveillance of the Cell 4 containers will be performed. During the S&M phase, no additional containers will be placed in storage in Cell 4.</p> <p>Containment Building</p> <p>The B Plant Containment Building - 221-B canyon and process cells will continue to store dangerous waste per the B Plant Complex Part A Permit Application during the S&M phase. Monitoring the differential pressure of the canyon during S&M will satisfy the 40 CFR 265.1101(c)(4) requirement to maintain the containment building's integrity. No additional surveillance of the dangerous waste or ancillary equipment will be performed to satisfy this requirement.</p>
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After reviewing Table 6-1, I observed that DOE and CHPRC did not identify WAC 173-303-360, *Emergencies*. This particular section of the DW regulations establishes requirements for emergency coordinators and emergency procedures.

Under the DW Regulations column, I have identified four items to address. The first is WAC 173-303-280, *Notice of Intent*. This is incorrect; WAC 173-303-280 references "General requirements for dangerous waste management facilities." The second is WAC 173-303-320, which states "Routine Surveillances are performed as identified in this S&M plan. No TSD unit inspections or surveillances are performed since all of the TSD units are in un-accessible portions of the B Plant Complex." DOE and CHPRC have not provided sufficient reason why the five tanks housed in building 221-BB, 221-BF, and 276-BA are inaccessible. The two tanks in 221-BB are accessible by an above ground structure and locked access door. The two tanks in 221-BF are accessible by an above ground structure and locked access door. The 276-BA structure has an above ground tank surrounded by a chain-link fence accessible through a locked gate.

The third is WAC 173-303-400 (Interim Status Facility Standards), which provides purpose, applicability, and standards to which the DWMUs must comply with. Under the Interim Status Standards, by reference the facilities owners or operators must submit the Part A Application, for approval by Ecology. The fourth item identified is 40 CFR 255 Subpart J. 40 CFR 255 is the

“Identification of Regions and Agencies for Solid Waste Management.” There is no Subpart J under 40 CFR 255.

Under the “S&M Compliance Applicability” column, DOE and CHPRC explain and document their decision to comply or not comply with the last four regulatory items identified above. This first paragraph provides a summarized description of the five tank systems.

“Removal of the dangerous waste solutions ensured that the vessels will be left in a state of minimum surveillance and maintenance until subsequent closure. Therefore, during the B Plant S&M phase, no surveillance of the dangerous waste units or ancillary equipment will be performed.”

Removal of DW and MW from the vessels are not complete, although removal was stated to be conducted to the greatest extent possible, in accordance with the End Points Document, many of the vessels as described earlier in this report contain heels, solids, liquids and residues. DOE and CHPRC are still required to comply with interim status standards as described in WAC 173-303-280 through WAC 173-303-400 for managing the remainder of DW or MW.

The complexity and risk associated with the 221-B canyon led to the creation of Section 8 of the HFFACO, which provides DOE and CHPRC an alternate path to closure and final disposition. In the End Points Document DOE and CHPRC identified certain sections of the facility under “Case 2, Internal Spaces, No Access Expect.” Under Case 2 spaces, DOE and CHPRC list the 221-B Canyon and Deck, 221-BB Steam Condensate (BCS) Building, and 221-BF Process Condensate (BCP) Storage Building. The End Points Document established all but 276-BA as inaccessible to S&M personnel.

HNF-3208, provided a detailed report of the current status of the 221-B canyon, which included DW and MW volume inventory, characterization and documenting radiation contamination throughout the canyon. This could provide DOE and CHPRC greater justification as to why the DWMUs in the canyon cannot meet standards addressed under WAC 173-303-280 through WAC 173-303-400. What HNF-3208 failed to do, is to provide the same detailed information for DW or MW volume inventory, sampling or characterization, and possible radiation contamination for 221-BB, 221-BF, and 276-BA. I did not observe information documenting complexities and risks associated with these three structures. DOE and CHPRC have not demonstrated the canyon building and the three structures outside, as meeting applicability under Section 8 of the HFFACO. Even under Section 8 DOE and CHPRC must meet the applicable requirements under WAC 173-303-280 through WAC 173-303-400 unless alternative requirements are identified.

In the documentation provided to me, I did not observe why DOE and CHPRC cannot meet their interim status standard requirements for the DWMUs that reside in 221-BB, 221-BF, and 276-BA. These five tanks housed in 221-BB, 221-BF, and 276-BA do not have sufficient documentation that would justify how these units are covered under the S&M Plan. Barring any further information as to why DOE and CHPRC cannot meet their obligations under interim status standards, the owner or operator must comply with the requirements for tank systems under 40 CFR Part 265 Subpart J, as incorporated by reference WAC 173-303-400(3)(a). This would prompt DOE and CHPRC to notify Ecology of last receipt of waste and would require the owner or operator to submit a closure plan as required under 40 CFR Part 265 Subpart G, as incorporated by reference WAC 173-303-400(3)(a).

The 221-B canyon, which houses the Tanks Systems, Containment Building, and Cell 4 are also subject to the interim status standards provided in WAC 173-303-400. Although DOE and CHPRC have provided evidence for alternative compliance requirements, they have not provided sufficient justification for 221-B to have alternatives for all of the requirements. DOE and CHPRC have not shown why they cannot notify Ecology of the last receipt of waste for the DWMUs and submit a closure plan, in accordance with 40 CFR Part 265 Subpart G, as incorporated by reference WAC 173-303-400(3)(a).

DOE and CHPRC have also provided discrepant or lack of information regarding the current status of the DWMUs in the S&M Plan. This includes information regarding tanks TK-10-1 activities and the omission of TK-2-1 from inventory lists after HNF-3208.

I observed the following applicable section in *Appendix A, Hazardous Material Remaining at the B Plant Facility*.

Location	End Points #	Material Description	Quantity/State
221-B Canyon (tank system TSD units)	04.01.02 04.01.20	The B Plant Complex Part A Permit application identifies the complete list of tanks that constitute each tank system The following vessels were reported as containing heavy metals (Simmons 1998): <ul style="list-style-type: none"> • NCAW tanks: None . • LLW treatment tanks: TK-9-1, TK-10-1, TK-24-1. • LLW concentrator: TK-23-1, E-23-3. • Organic waste storage: TK-26-1, TK-27-2, TK-27-4, TK-30-3. • MISC tank storage: E-5-2, E-20-2, TK-22-1, T-28-1, TK-29-2, T-30-1, TK-32-1, TK-34-2, TK-35-2. • Other Tanks: TK-28-2, TK-34-1, (Simmons 1998) . 	<ul style="list-style-type: none"> • Barium 35.05 kg • Cadmium 0.42 kg • Chromium 18.64 kg • Lead 210.2 kg • Silver 145 g
221-B Canyon (containment building TSD unit)	N/A	The B Plant Complex Part A Permit application identifies: the scope of the 221-B Canyon defined as a containment building TSD unit. Lead in the form on shielding, counterweights, covers, blankets, bricks, paint and cask was reported (Simmons 1998).	<ul style="list-style-type: none"> Lead: +Shielding 74,342 lb. +Counterweights 8,920 lb. +Blankets 16,506 lb. +Cask 17,500 lb.
221-B Canyon (container TSD unit)	N/A	The B Plant Complex Part A Permit application identifies Cell 4 as a container management TSD unit in the 221-B Canyon. <ul style="list-style-type: none"> • Cell 4: 32 55-gallon drums/one crucible. 	<ul style="list-style-type: none"> • Solid mixed waste with no free liquids. • Light bulbs with lead solder.
221-BB Steam Condensate (BCS) Building System	08.03.11	<ul style="list-style-type: none"> • Mobilux EP 1 • Mobilux EP 2 • Potassium Permanganate • WEDAC 	<ul style="list-style-type: none"> • Trace amount in fan motor bearings • Trace amount in fan motor bearings • Trace amounts in liquid or solid form as residual heels or attached to internal surfaces in piping associated with the two tanks in north corner of the cold side of 221-BB

			<ul style="list-style-type: none"> Trace amounts in liquid or solid form as residual heels or attached to internal surfaces in piping associated with the two tanks in north corner of the cold side of 221-BB Reference: Letter 16F00-97-RA W-103
221-BF Process Condensate (BCP) Storage Building System	10.03.10	<ul style="list-style-type: none"> Citric Acid Nitric Acid Sodium Hydroxide 	<ul style="list-style-type: none"> Tanks in 221-BF were flushed to minimum heels in December 1995. Resource Conservation and Recovery Act (RCRA) listed materials may be present in liquid or residual heels or attached to internal surfaces in the abandoned in-place tanks, associated valves, piping, and pumps. Reference: Letter I6F00-97-029-RAW
Organic Storage Tanks	18.05.11	<ul style="list-style-type: none"> 70%NPH 20%D2EHPA (Di-(2-ethylhexyl) phosphoric acid) 10%TBP (Tributyl phosphate) 	<ul style="list-style-type: none"> Estimate less than 2 gal material in the heel of tank #WHCU 0081753 Reference: Letters 16F00-98-RAW -023 and 16D00-98-SEK-06~
211-B Chemical Tank Farm System	01.02.09	<ul style="list-style-type: none"> *Nitric Acid *Hydroxy Acetic Acid *Ammonium Carbonate *Sodium Hydroxide *Demineralizer regeneration effluent consisting of salt cake from sodium hydroxide and sulfuric acid Lead 	<ul style="list-style-type: none"> In Tanks TK-SA-101, -102, and -103 (found dry) In tank TK-SA-120 (found dry) 127.5 lb. in tank TK-MNB-173 112.5 lb. in tank TK-SQ-141 675 lb. in tank TK-SQ-142 2025 lb. in tank TK-SQ-143 2250 lb. in TK-SK-161 NOTE: Asterisked items may be present in solid or liquid form as residual heels or attached to internal surfaces in the abandoned in-place tanks, associated valves and piping and pumps. <ul style="list-style-type: none"> Trace amounts may be found in paint on stairs and Catwalk 68 lb. total contained in the drip pans for Tanks 141, 142, 143, and 161 Counterweights may contain solid metal lead billet. Ref: Letter 16F00-96-099-RAW and 16F00-98-RAW-35

The S&M Plan Appendix A summarizes the inventories of vessels, containers, and the containment building. As identified earlier in the report, the Appendix A inventory in the S&M Plan is discrepant with other documents such as the 2013 LDR Report and the Preclosure Work Plan. Not only are the total container amounts discrepant, there appears to be vessel volume discrepancies between each document.

The Appendix A inventory also documents "hazardous materials," which are identified with material safety data sheets that still remain in tanks outside of the 221-B canyon. The vessels are on the north side of the canyon buildings. The row above labeled "211-B Chemical Tank Farm System" describes the contents and volumes, which range from 122.5 pounds to 2,250 pounds. According to the End Points Document, these tanks associated with 211-B are "Case 6, System – Abandoned in Place." The chemicals contents remaining have been stored in these vessels from the beginning of the S&M phase, which began in 1999. DOE and CHPRC provide the following response on October 22, 2014.

"The 211-B Chemical Tank Farm is listed under Case 3 in the end point criteria document. However the vessels were determined to be Case 6 (abandon in place). The signed completion form for the vessels is found on page 104. In the HNF-SD-WM-TPP-054, Revision 2, 'B-Plant

End Points, dated March 19, 1998 criterion is Task TT-4. In conjunction with this task, specific flush and sampling requirements were established.

I did not observe sufficient information regarding the hazardous characteristics of the remaining chemicals. DOE and CHPRC provided the following regarding why these tanks are not noted in HNF-3208 or the Part A Application.

“These tanks were considered ‘product tanks’ and therefore not required to be identified in the Part A. The scope of HNF-3208 is limited to tanks within 221-B canyon building. They are not in the Part A application because they were not deemed to meet the agreed to pre-closure work plan, Section 1.1 criteria for including tanks and vessels in the B Plant Complex Part A. Although no supporting documentation has been located at this time, it appears that the TPA Parties (Ecology, EPA, and DOE) agreed that it did not meet the criteria. In the HNF-SD-WM-TPP-054, Revision 2, *“B-Plant End Points,”* dated March 19, 1998, Appendix A criteria document indicates that all the tanks are empty. As noted in the DOE/RL-99-24 *“Surveillance and Maintenance Plan for the 221-B Facility {B Plant},”* Revision 3 reference table, the quantities of hazardous material remaining may be present in solid or liquid form as residual heels or attached to internal surfaces in the abandoned in place tanks, associated valves and piping and pumps.”

The hazardous substances stored in the vessels associated with 211-B have not been used for their intended purpose for more than 15 years. The vessels continue to hold chemicals in possibly liquid or solid form that may designate as DW or MW. DOE and CHPRC state that the Tri-Parties agreed that the 211-B vessels and their remaining chemicals did not meet the criteria for the Part A Application and also stated that supporting documentation cannot be located. Review for possible inclusion of the 211-B vessel in the Part A Application needs to be addressed to ensure the remaining chemicals do not pose a risk to the environment and human health.

Findings regarding the August 29, 2014 Inspection Report of the B Plant Complex can be found in the “Compliance Problems” and Concern sections below.

References

- Washington State Department of Ecology, B Plant Complex, Revision 11, Addendum A, Dated September 22, 2008.
- Hanford Federal Facility Agreement and Consent Order Revision 8c, Dated July 18, 2011.
- Ecology, EPA, and DOE, 1996, Hanford Federal Facility Agreement and Consent Order (Tri-Party 47 Agreement), Washington State Department of Ecology, U.S. Environmental Protection Agency, 48 U.S. Department of Energy, Olympia, Washington, as amended.
- Order 430.1B, U.S. Department of Energy Real Property Asset Management, Dated September 24, 2003.
- DOE/EM-0383, The Decommissioning Handbook, Dated January 2000.
- WHC-SD-TPP-054, HNF-SD-WM-TPP-054 B Plant End Points Document, Revision 2B, Dated March 1, 1998.
- DOE/RL-99-24, Surveillance and Maintenance Plan for the 221-B Facility (B Plant), Revision 3, Dated February 29, 2008.
- DOE/RL-2010-27, Calendar Year 2009 Hanford Site Mixed Waste Land Disposal Restrictions Full Report, Revision 0, Dated March 29, 2010.
- DOE/RL-2011-31, Calendar Year 2010 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, Revision 0, Dated March 22, 2011.
- DOE/RL-2012-12, Calendar Year 2011 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, Revision 0, Dated March 15, 2012.
- DOE/RL-2013-19, Calendar Year 2012 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, Revision 0, Dated March 21, 2013.
- DOE/RL-2014-17, Calendar Year 2013 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report, Revision 0, Dated March 11, 2014.
- HNF-3208, Documentation of Remaining Hazardous Substances/Dangerous Waste in B Plant, Revision 0, Dated September 23, 1998.
- DOE/RL-98-12, B Plant Complex Preclosure Work Plan, Revision 1, Dated February 2, 1999.
- 2CP-SUR-B-04008, Technical Procedure "B Plant Annual Facility and Grounds Surveillance," Revision 2, Change 3, Dated April 17, 2014.
- Change Number, M-20-96-01, Federal Facility Agreement and Consent Oder Change Control Form, Dated October 18, 1996.
- Package Number SM-14-02056, Central Plateau Project Work Document "B-Plant Annual Surveillance" Dated April 2014.
- PRC-STD-TQ-40236, Central Plateau Project Surveillance and Maintenance Dangerous Waste Training Plan, Revision 1, Change 2, Dated May 7, 2013.
- HNF-IP-0263-CP S&M, Building Emergency Plan for Surveillance and Maintenance, Revision 15, Dated June 30, 2014.

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B Plant Complex
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Dangerous Waste Compliance Assessment B Plant Complex, Index # 96.089, Dated February 28, 1996.
DOE Response to Ecology B Plant Assessment, on 2-28-2014, dated July 2, 1996.

DOE/RL-2014-32, Hanford Site Groundwater Monitoring Report for 2013, Revision 0, Dated August 21, 2014.

EPA530-K-05-018 Introduction to Tanks (40 CFR Parts 264/265, Subpart J) Solid Waste and Emergency Response, (5305W), Dated September 2005.

Washington State Department of Ecology Inspection of the B Plant Complex Treatment, Storage, and Disposal Unit Request for Documents and Information Response Table, Dated August 19, 2014.

Washington State Department of Ecology Request for Information From the B Plant Complex Dangerous and Mixed Waste Units Inspection on August 19, 2014 Per Email, Dated September 19, 2014.

Washington State Department of Ecology Photo Log, B Plant Complex, August 19, 2014

Ecology's Final Determination, Dated March 29, 2000.

Compliance Problems

The Dangerous Waste inspection on August 19, 2014 found the following compliance problems.

Each problem is covered in three parts:

- (1) **Citation from the regulations**
- (2) **Specific observations** from the inspection that highlight the problem
- (3) **Required actions** needed to fix the problem and achieve compliance.

The last pages of this report are a 'Compliance Certificate' listing the violations and the actions required to gain compliance. This certificate must be returned to Ecology within 365 days of receipt. The certificate explains how to complete the form and return it to the Department of Ecology.

This does not relieve you of your continuing responsibility to comply with the regulations at all times.

- 1) **WAC 173-303-070(3). Designation procedures. (a) To determine whether or not a solid waste is designated as a dangerous waste a person must: (i) First, determine if the waste is a listed discarded chemical product, WAC 173-303-081; (ii) Second, determine if the waste is a listed dangerous waste source, WAC 173-303-082; (iii) Third, if the waste is not listed in WAC 173-303-081 or 173-303-082, or for the purposes of compliance with the federal land disposal restrictions as adopted by reference in WAC 173-303-140, determine if the waste exhibits any dangerous waste characteristics, WAC 173-303-090; and (iv) Fourth, if the waste is not listed in WAC 173-303-081 or 173-303-082, and does not exhibit a characteristic in WAC 173-303-090, determine if the waste meets any dangerous waste criteria, WAC 173-303-100. (b) A person must check each section, in the order set forth, until they determine whether the waste is designated as a dangerous waste. Once the waste is determined to be a dangerous waste, further designation is not required except as required by subsection (4) or (5) of this section. If a person has checked the waste against each section and the waste is not designated, then the waste is not subject to the requirements of chapter 173-303 WAC. Any person who wishes to seek an exemption for a waste which has been designated DW or EHW must comply with the requirements of WAC 173-303-072. (c) For the purpose of determining if a solid waste is a dangerous waste as identified in WAC 173-303-080 through 173-303-100, a person must either: (i) Test the waste according to the methods, or an approved equivalent method, set forth in WAC 173-303-110; or (ii) Apply knowledge of the waste in light of the materials or the process used, when: (A) Such knowledge can be demonstrated to be sufficient for determining whether or not it designated and/or designated properly; and (B) All data and records supporting this determination in accordance with WAC 173-303-210(3) are retained on-site.**

Observations: The S&M Plan, Appendix A inventory documents "hazardous materials," which are identified with material safety data sheets that still remain in tanks outside of the 221-B canyon. The tanks are on the north side of the canyon buildings. The row labeled "211-B Chemical Tank Farm System" describes the contents and volumes, which range from 122.5 pounds to 2,250 pounds. According to the End Points Document, these tanks associated with 211-B are "Case 6, System - Abandoned in Place." The chemicals contents remaining have been stored in these tanks from the beginning of the S&M phase, which began in 1999. I did not observe sufficient information regarding the hazardous characteristics of the remaining chemicals. The hazardous substances stored

in the tanks associated with 211-B have not been used for their intended purpose for more than 15 years. The tanks continue to hold chemicals in possibly liquid or solid form that may designate as DW or MW. DOE and CHPRC state that the Tri-Parties agreed that the 211-B tanks and their remaining chemicals did not meet the criteria for the Part A Application and also stated that supporting documentation cannot be located.

HNF-3208 identifies Cell 2 in the 221-B canyon contains tank TK-2-1 with approximately 1,975 gallons (2,500 kilograms) of Duolite ARC-359 "spent resin from T-18-2." The content in TK-2-1 is a spent resin, which could indicate that the tank is actively storing DW or MW.

Action Required: Within 60 days of receipt of this inspection report USDOE and CHPRC must determine whether or not the solid waste in the 211-B Chemical Tank Farm System and TK-2-1 is designated as a dangerous waste or mixed waste in accordance with WAC 173-303-070(3). Solid waste determined to be dangerous waste or mixed waste must be managed in accordance with WAC 173-303.

- 2) **WAC 173-303-340(1). Required equipment. All facilities must be equipped with the following, unless it can be demonstrated to the department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below: (a) An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel; (b) A device, such as a telephone or a hand-held, two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams; (c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and (d) Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.**

Observations: According to HNF-IP-0263-CP S&M, *Building Emergency Plan for Surveillance and Maintenance*, the S&M personnel use portable emergency equipment on a vehicle at building MO-294. Mr. Corriel said the vehicle accompanies personnel when they visit a facility. I did not observe emergency equipment stored at the B Plant Complex or emergency equipment identified in the building emergency plan located at the B Plant Complex.

Action Required: Within 90 days of receipt of this inspection report, DOE and CHPRC must place applicable emergency equipment in accordance with WAC 173-303-340(1) at the B Plant Complex. The locations and description of the emergency equipment must be included in the revised building emergency plan.

- 3) **WAC 173-303-350(2). Contingency plan. Each owner or operator must have a contingency plan at his facility for use in emergencies or sudden or nonsudden releases which threaten human health and the environment. If the owner or operator has already prepared a spill prevention control and countermeasures (SPCC) plan in accordance with Part 112 of Title 40**

C.F.R., or some other emergency or contingency plan, they need only amend that plan to incorporate dangerous waste management provisions that are sufficient to comply with the requirements of this section and WAC 173-303-360. The owner or operator may develop one contingency plan that meets all regulatory requirements. Ecology recommends that the plan be based on the National Response Team's Integrated Contingency Plan Guidance ("One Plan") as found at www.nrt.org. When modifications are made to nondangerous waste (non-Hazardous Waste Management Act or nondangerous waste regulation) provisions in an integrated contingency plan, the changes do not trigger the need for a dangerous waste permit modification.

Observations: According to HNF-IP-0263-CP S&M, *Building Emergency Plan for Surveillance and Maintenance*, buildings and facilities covered by this BEP include the B Plant Complex, REDOX Complex, PUREX Complex, 224-B, 224-T, 242-B/BL, and less than 90-day accumulation area(s) managed by S&M personnel. This BEP is not specific to the B Plant Complex and includes multiple facilities.

Action Required: Within 90 days of receipt of this inspection report, DOE and CHPRC must revise and submit the current Building Emergency Plan or submit a Building Emergency Plan specifically for the B Plant Complex in accordance with WAC 173-303-350(2) for Ecology's review. The Building Emergency Plan must contain the applicable content in accordance with WAC 173-303-350(3) for each facility addressed in the plan.

- 4) **WAC 173-303-350(3)(f). An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.**

Observation: Evacuation or alternative evacuation routes for the B Plant Complex are not described in the HNF-IP-0263-CP S&M, *Building Emergency Plan for Surveillance and Maintenance*.

Action Required: Within 90 days of receipt of this inspection report, DOE and CHPRC must include descriptions of evacuation routes and alternative evacuation routes in the Building Emergency Plan for the B Plant Complex. The Building Emergency Plan must be submitted to Ecology for review.

- 5) **WAC 173-303-640(5)(d). All tank systems holding dangerous waste must be marked with labels or signs to identify the waste contained in the tank. The label or sign must be legible at a distance of at least fifty feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s). (Note—If there already is a system in use that performs this function in accordance with local, state or federal regulations, then such system will be adequate.)**

Observation: DOE and CHPRC has not provided documentation justifying that the five tanks (BCP, BCS, 221-BF-A, 221-BF-B, or ISO East) located outside of the 221-B canyon building cannot have signs to identify the waste contained in the tank. During the August 19, 2014 walkthrough of the B Plant Complex I observed the locked doors on the above ground structures (221-BB and 221-BF) were access points for below ground tanks BCP, BCS, 221-BF-A, and 221-BF-B. Also during the

walkthrough I observed the above ground ISO-East tank is accessible through a locked gate on a chain link fence surround 276-BA. DOE and CHPRC have not provided documentation that demonstrates the five tanks located at 221-BB, 221-BF, and 276-BA are not accessible and not subject to WAC 173-303-640(5)(d) requirements.

Action Required: Within 30 days of receipt of this inspection report, DOE and CHPRC must label the five tanks located at 221-BB, 221-BF, and 276-BA, in accordance with WAC 173-303-640(5)(d). DOE and CHPRC must submit to Ecology supporting photographs that labeling has been completed within the 30 days upon receipt of this report.

- 6) **40 CFR Part 265.112(a) as incorporated by reference in WAC 173-303-400(3)(a). Written plan. By May 19, 1981, or by six months after the effective date of the rule that first subjects a facility to provisions of this section, the owner or operator of a hazardous waste management facility must have a written closure plan. Until final closure is completed and certified in accordance with §265.115, a copy of the most current plan must be furnished to the Regional Administrator upon request, including request by mail. In addition, for facilities without approved plans, it must also be provided during site inspections, on the day of inspection, to any officer, employee, or representative of the Agency who is duly designated by the Administrator.**

Tri-Party Agreement Attachment 2, Section 8 states in part that, "Notwithstanding any other provision of Section 8.0, EPA and Ecology reserve the right to require closure in accordance with Federal and State hazardous waste law, and the Agreement, and to require response or corrective actions in accordance with RCRA and CERCLA and the Agreement, at any time. During the facility disposition process, DOE shall comply with all applicable environmental, safety and health, and security requirements."

Observation: During the B-Plant Complex site inspection on August 19, 2014, DOE and CHPRC told Ecology they did not have a closure plan for the B Plant DWMUs. Additionally the closure plan was not provided to Ecology when I requested DOE and CHPRC to provide a closure plan for the DWMUs on September 19, 2014.

Action Required: Within 365 days of receipt of this inspection report, DOE and CHPRC must submit a written closure plan for the DWMUs in the 221-B Canyon Building, in accordance with WAC 173-303-610 to Ecology; the closure plan must be maintained in the facility's operating record. Additionally, within 120 days of receipt of this inspection report, DOE and CHPRC must submit a separate written closure plan for tanks BCP, BCS, 221-BF-A, and 221-BF-B, ISO East and any other identified DWMUs outside the 221-B in accordance with WAC 173-303-610 to Ecology; the closure plan must be maintained in the facility's operating record.

- 7) **40 CFR Part 265.195(a), 265.195(b)(2), and 265.195(b)(3) as incorporated by reference in WAC 173-303-400(3)(a). The owner or operator must inspect, where present, at least once each operating day, data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design.**

(2) Above ground portions of the tank system, if any, to detect corrosion or releases of waste; and

(3) The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of dangerous waste (e.g., wet spots, dead vegetation).

Observation: DOE and CHPRC have not demonstrated why tanks BCP, BCS, 221-BF-A, and 221-BF-B and ISO East are not accessible (according to Table 6-1 in the S&M Plan) and not subject to 40 CFR Part 265.195 requirements. DOE or CHPRC have not conducted inspections at least once each operating day for tanks BCP, BCS, 221-BF-A, 221-BF-B, and ISO East.

Action Required: DOE and CHPRC must immediately upon receipt of this report, begin to conduct inspections of tanks BCP, BCS, 221-BF-A, 221-BF-B and ISO East in accordance with 40 CFR Part 265.195(a), 265.195(b)(2), and 265.195(b)(3) as incorporated by reference in WAC 173-303-400(3)(a). Within 30 days of receipt of this inspection report, the start date and two weeks of inspection logs documenting the daily inspections must be submitted to Ecology.

8) M-026-01, W, X And Intervening Years. Submit an annual Hanford Land Disposal Restrictions (LDR) Summary Report in accordance with the Agreement requirements to cover the period from 1/1 of the previous year through 12/31 of the reporting year. The Hanford Land Disposal Restrictions Summary report will contain the following elements:

- **Section 1.0 Introduction**
- **Section 1.1 CY 20XX LDR Summary Report Overview (where XX will be the reporting year)**
- **Section 1.2: Summary Inventory Of Waste Treatment Groups and Forecast Generation Rates**
- **Section 1.3, Potential Mixed Waste**
- **Section 2.0: Assessments Of Mixed Waste Storage Areas And Potential Mixed Waste**
- **Section 2.1: Introduction**
- **Section 2.2: Assessment Schedules**
- **Section 3.0: Summary Of Characterization Information**
- **Section 4.0: Summary Of Treatment Information**
- **Section 5.0: Storage Volume And Container Numbers For Selected Storage Locations**
- **Section 6.0: References**
- **Table 1-1: Stored Volumes Of Mixed Waste and Generation Projections**
- **Table 1-2: Treatability Group Summary Of Storage, Characterization, and Treatment Activities**
- **Table 1-3: Explanation Of Table 1-4, Potential Mixed Waste**
- **Table 1-4: Potential Mixed Waste**
- **Table 1-5: Historical List Of Materials Deleted From Potential Mixed Waste Table**

- **Table 2-1: Summary Of DOE-RL Assessment Results**
- **Table 2-2: DOE-RL Assessments For Calendar Years 2005 Through 2007 (updated for next three years until no assessments are scheduled)**
- **Table 2-3: Summary Of DOE-RL Assessment Results**
- **Table 3-1: Summary Of Characterization Information For Each Treatability Group**
- **Table 4-1: Summary Of Treatment Information For Each Treatability Group**
- **Table 5-1: Storage Volume And Number Of Containers For Selected Hanford Locations**

Table 5-1 will contain the storage volume and the number of containers reported for the following Hanford Site locations: CWC, LLBG, WRAP, PFP, T Plant Complex, WSCF, 325 HWTU, 324, 327, 200 ETF, and 222-S.

Observation: The 2009 and 2010 LDR Reports show the B Plant Complex Containment Building inventory as storing 294,000 kilograms of mixed waste. The 2011, 2012, and 2013 LDR Reports show the B Plant Complex Containment Building inventory as storing 0 kilograms of mixed waste.

Action Required: Upon receipt of this inspection report all future annual LDR Reports must correctly inventory and document the volume and/or weight of mixed waste stored in the B Plant Complex DWMUs, in accordance with the Hanford Federal Facility Agreement and Consent Order milestone "M-026-01, W, X And Intervening Years".

Concerns and Suggestions

- 1) HNF-3208, the S&M Plan, and the *2009 Land Disposal Restrictions Full Report* (DOE/RL-2010-27), have different total container counts for Cell 4's inventory. According to HNF-3208 and DOE/RL-2010-27 there is a total of 43 containers with 7 of the containers designated as MW. Appendix A of the S&M Plan identifies a total of 33 containers and does not provide information regarding which containers are MW or LLW.
- 2) B Plant Complex DWMUs tank system waste is documented in the *Potential Mixed Waste Table* Appendix C of the 2009 LDR Report and Table 1-4 of the 2010 through 2013 LDR Reports. The possibility of MW generated after 1987 may not be accounted for in the annual LDR report. Some of the tank system waste may not meet the criteria to remain in the *Potential Mixed Waste Table*, the waste associated with the tank systems should be reevaluated to possibly be accounted for as a current inventory of mixed waste.
- 3) S&M personnel that conducted the 2013 annual surveillance inspection for the B Plant Complex did not complete or document (Datasheet 3) for the surveillance of the DWMUs, which is dictated in the *B Plant Annual Facility and Grounds Surveillance Technical Procedure*. The *Data Sheet 3 – B Plant RCRA Treatment, Storage and Disposal Facility Surveillance* should be used to inspect the DWMUs at the B Plant Complex and documented in accordance with Annual Inspection Procedures.
- 4) According to the Preclosure Work Plan and S&M Plan the B Plant Complex DWMU tank, TK-10-1 appears to be actively managing in-leakage liquid from the 221-B canyon building. DOE and CHPRC have not provided documentation of secondary containment upgrades for Cell 10 to meet requirements of §265.193; have not provided documentation regarding an integrity assessment conducted on tank TK-10-1 or alternative measures to meet tank integrity assessments under §265.191.
- 5) I observed in Table 6-1 of the S&M Plan that DOE and CHPRC did not identify WAC 173-303-360, *Emergencies*. This particular section of the DW regulations establishes requirements for emergency coordinators and emergency procedures. Under the DW Regulations column, I have identified WAC 173-303-280, *Notice of Intent* is incorrect; WAC 173-303-280 references *General requirements for dangerous waste management facilities*.
- 6) The S&M Plan Appendix A summarizes the inventories of vessels, containers and the containment building. As identified earlier in the report, the Appendix A inventory in the S&M Plan is discrepant with other documents such as the 2013 LDR Report and the Preclosure Work Plan. Not only are the total container amounts discrepant, there appears to be vessel volumes and weight discrepancies between each document.

COMPLIANCE CERTIFICATE

Return this Completed Form within 365 days of receipt or Request an Extension

Use this form to report if the action(s) required to achieve compliance that were identified during the inspection on August 19, 2014 have been completed.

Complete the shaded portions and mail a copy of this form to Edward Holbrook by March 12, 2016 at the following address: Washington Department of Ecology, Nuclear Waste Program, Attention: Edward Holbrook, 3100 Port of Benton Blvd. Richland WA 99354.

You may request an extension of the deadlines to achieve compliance. Make the request in writing, including the reasons an extension is necessary and proposed date(s) for completion, and send it to Edward Holbrook before the date specified above. Ecology will provide a written approval or denial of your request.

If you have any questions about information in this Compliance Report, please call: Edward Holbrook at (509) 372-7909

The problems listed below must be corrected to comply with Washington Dangerous Waste Regulations (Chapter 173-303 WAC), or other environmental laws or regulations. Note the date each action is completed and initial each item. Include required documentation, and make any other comments explaining the actions taken on a separate piece of paper.

- 1) **WAC 173-303-070(3). Designation procedures. (a) To determine whether or not a solid waste is designated as a dangerous waste a person must: (i) First, determine if the waste is a listed discarded chemical product, WAC 173-303-081; (ii) Second, determine if the waste is a listed dangerous waste source, WAC 173-303-082; (iii) Third, if the waste is not listed in WAC 173-303-081 or 173-303-082, or for the purposes of compliance with the federal land disposal restrictions as adopted by reference in WAC 173-303-140, determine if the waste exhibits any dangerous waste characteristics, WAC 173-303-090; and (iv) Fourth, if the waste is not listed in WAC 173-303-081 or 173-303-082, and does not exhibit a characteristic in WAC 173-303-090, determine if the waste meets any dangerous waste criteria, WAC 173-303-100. (b) A person must check each section, in the order set forth, until they determine whether the waste is designated as a dangerous waste. Once the waste is determined to be a dangerous waste, further designation is not required except as required by subsection (4) or (5) of this section. If a person has checked the waste against each section and the waste is not designated, then the waste is not subject to the requirements of chapter 173-303 WAC. Any person who wishes to seek an exemption for a waste which has been designated DW or EHW must comply with the requirements of WAC 173-303-072. (c) For the purpose of determining if a solid waste is a dangerous waste as identified in WAC 173-303-080 through 173-303-100, a person must either: (i) Test the waste according to the methods, or an approved equivalent method, set forth in WAC 173-303-110; or (ii) Apply knowledge of the waste in light of the materials or the process used, when: (A) Such knowledge can be demonstrated to be sufficient for determining whether**

or not it designated and/or designated properly; and (B) All data and records supporting this determination in accordance with WAC 173-303-210(3) are retained on-site.

Compliance Item	Date Completed	Initials
Within 60 days of receipt of this inspection report USDOE and CHPRC must determine whether or not the solid waste in the 211-B Chemical Tank Farm System and TK-2-1 is designated as a dangerous waste or mixed waste in accordance with WAC 173-303-070(3). Solid waste determined to be dangerous waste or mixed waste must be managed in accordance with WAC 173-303.		

- 2) **WAC 173-303-340(1). Required equipment.** All facilities must be equipped with the following, unless it can be demonstrated to the department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below: (a) An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel; (b) A device, such as a telephone or a hand-held, two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams; (c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and (d) Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

Compliance Item	Date Completed	Initials
Within 90 days of receipt of this inspection report, DOE and CHPRC must place applicable emergency equipment in accordance with WAC 173-303-340(1) at the B Plant Complex. The locations and description of the emergency equipment must be included in the revised building emergency plan.		

- 3) **WAC 173-303-350(2). Contingency plan.** Each owner or operator must have a contingency plan at his facility for use in emergencies or sudden or nonsudden releases which threaten human health and the environment. If the owner or operator has already prepared a spill prevention control and countermeasures (SPCC) plan in accordance with Part 112 of Title 40 C.F.R., or some other emergency or contingency plan, they need only amend that plan to incorporate dangerous waste management provisions that are sufficient to comply with the requirements of this section and WAC 173-303-360. The owner or operator may develop one contingency plan that meets all regulatory requirements. Ecology recommends that the plan be based on the National Response Team's Integrated Contingency Plan Guidance ("One Plan") as found at

www.nrt.org. When modifications are made to nondangerous waste (non-Hazardous Waste Management Act or nondangerous waste regulation) provisions in an integrated contingency plan, the changes do not trigger the need for a dangerous waste permit modification.

Compliance Item	Date Completed	Initials
Within 90 days of receipt of this inspection report, DOE and CHPRC must revise and submit the current Building Emergency Plan or submit a Building Emergency Plan specifically for the B Plant Complex in accordance with WAC 173-303-350(2) for Ecology's review. The Building Emergency Plan must contain the applicable content in accordance with WAC 173-303-350(3) for each facility addressed in the plan.		

- 4) **WAC 173-303-350(3)(f). An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.**

Compliance Item	Date Completed	Initials
Within 90 days of receipt of this inspection report, DOE and CHPRC must include descriptions of evacuation routes and alternative evacuation routes in the Building Emergency Plan for the B Plant Complex. The Building Emergency Plan must be submitted to Ecology for review.		

- 5) **WAC 173-303-640(5)(d). All tank systems holding dangerous waste must be marked with labels or signs to identify the waste contained in the tank. The label or sign must be legible at a distance of at least fifty feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s). (Note—If there already is a system in use that performs this function in accordance with local, state or federal regulations, then such system will be adequate.)**

Compliance Item	Date Completed	Initials
Within 30 days of receipt of this inspection report, DOE and CHPRC must label the five tanks located at 221-BB, 221-BF, and 276-BA, in accordance with WAC 173-303-640(5)(d). DOE and CHPRC must submit to Ecology supporting photographs that labeling has been completed within the 30 days upon receipt of this report.		

- 6) **40 CFR Part 265.112(a) as incorporated by reference in WAC 173-303-400(3)(a). Written plan. By May 19, 1981, or by six months after the effective date of the rule that first subjects a facility to provisions of this section, the owner or operator of a hazardous waste management facility must have a written closure plan. Until final closure is completed and certified in accordance with §265.115, a copy of the most current plan must be furnished to the Regional Administrator upon request, including request by mail. In addition, for facilities without approved plans, it must also be provided during site inspections, on the day of inspection, to any officer, employee, or representative of the Agency who is duly designated by the Administrator.**

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Compliance Item	Date Completed	Initials
Within 365 days of receipt of this inspection report, DOE and CHPRC must submit a written closure plan for the DWMUs in the 221-B Canyon Building, in accordance with WAC 173-303-610 to Ecology; the closure plan must be maintained in the facility's operating record. Additionally, within 120 days of receipt of this inspection report, DOE and CHPRC must submit a separate written closure plan for tanks BCP, BCS, 221-BF-A, and 221-BF-B, ISO East and any other identified DWMUs outside the 221-B in accordance with WAC 173-303-610 to Ecology; the closure plan must be maintained in the facility's operating record.		

- 7) **40 CFR Part 265.195(a), 265.195(b)(2), and 265.195(b)(3) as incorporated by reference in WAC 173-303-400(3)(a). The owner or operator must inspect, where present, at least once each operating day, data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design.**

(2) **Above ground portions of the tank system, if any, to detect corrosion or releases of waste; and**

(3) **The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of dangerous waste (e.g., wet spots, dead vegetation).**

Compliance Item	Date Completed	Initials
DOE and CHPRC must immediately upon receipt of this report, begin to conduct inspections of tanks BCP, BCS, 221-BF-A, 221-BF-B and ISO East in accordance with 40 CFR Part 265.195(a), 265.195(b)(2), and 265.195(b)(3) as incorporated by reference in WAC 173-303-400(3)(a). Within 30 days of receipt of this inspection report, the start date and two weeks of inspection logs documenting the daily inspections must be submitted to Ecology.		

8) M-026-01, W, X And Intervening Years. Submit an annual Hanford Land Disposal Restrictions (LDR) Summary Report in accordance with the Agreement requirements to cover the period from 1/1 of the previous year through 12/31 of the reporting year. The Hanford Land Disposal Restrictions Summary report will contain the following elements:

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Table 5-1 will contain the storage volume and the number of containers reported for the following Hanford Site locations: CWC, LLBG, WRAP, PFP, T Plant Complex, WSCF, 325 HWTU, 324, 327, 200 ETF, and 222-S.

Compliance Item	Date Completed	Initials
Upon receipt of this inspection report all future annual LDR Reports must correctly inventory and document the volume and/or weight of mixed waste stored in the B Plant Complex DWMUs, in accordance with the Hanford Federal Facility Agreement and Consent Order milestone "M-026-01, W, X And Intervening Years".		

The Department of Ecology is an equal opportunity agency and does not discriminate on the basis of race, creed, color, disability, age, religion, national origin, sex, marital status, disabled veteran's status, Vietnam Era veteran's status or sexual orientation. If you have special accommodation needs or require this document in alternative format, please contact Edward Holbrook at (509) 372-7909 (Voice) or use the Washington State Relay operator by dialing either 711 or 1-800-833-6388 (TTY).

B Plant Complex (WA7890008967)

Inspection Date: August 19, 2014

Photographer: Stephanie Schleif

Witness: Edward Holbrook

No.	Location	Activity Description or Other Comment	Photo
1.	221-BF Below Grade Tanks	<p>DSC00123 (3:25 p.m.)</p> <p>Two below grade process condensate tanks, covered with concrete blocks. The tanks are a part of the miscellaneous tank system. The shed behind the concrete pad is used for accessing the below grade tanks for sampling activities. See the Part A Application for more details.</p>	
2.	Southside 221-BB and 221-BD	<p>DSC00124 (3:30 p.m.)</p> <p>The 221-BB building has tanks that are a part of the miscellaneous tank system. There are two tanks accessible by the building. See the Part A Application for more details.</p>	
3.	Southside 221-BB	<p>DSC00125 (3:32 p.m.)</p> <p>Close up of the 221-BB building entrance. The entrance has a padlock and signs regarding entrance, asbestos, radioactivity and contact information.</p>	

B Plant Complex (WA7890008967)

Inspection Date: August 19, 2014

Photographer: Stephanie Schleif

Witness: Edward Holbrook

No.	Location	Activity Description or Other Comment	Photo
4.	221-BK and 2711-B	DSC00126 (3:34 p.m.) 221-BK is the monitoring and control room for the HEPA filter-air system, which is for the 221-B Canyon.	
5.	221-B Canyon Eastside	DSC00127 (3:40 p.m.) The crack on the east side concrete wall of the 221-B canyon. The crack nearly runs the full length of the wall.	

B Plant Complex (WA7890008967)

Inspection Date: August 19, 2014

Photographer: Stephanie Schleif

Witness: Edward Holbrook

No.	Location	Activity Description or Other Comment	Photo
6.	276-BA ISO East Tank	DSC00128 (3:44 p.m.) The ISO East tank is a part of the Organic Mixed Waste Storage System. The Tank is in the Northwest corner of the B Plant Complex Boundary and has a separate fence enclosing the immediate area surrounding the tank.	