

DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**FACT SHEET**

**Proposed Permit Modification to Part V of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste, WA7890008967*, to add Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut**

June 8, 2020

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## Fact Sheet

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### **PERMITTEES**

United States Department of Energy  
Richland Operations Office  
(Owner/Operator)  
P.O. Box 550, MSIN A7-50  
Richland, Washington 99352

CH2M HILL Plateau Remediation Company  
(Co-Operator)  
P.O. Box 1600, MSIN: H7-30  
Richland, Washington 99352

The Washington State Department of Ecology (Ecology) developed this Fact Sheet in accordance with the requirements of Washington Administrative Code (WAC) 173-303-840(2)(f). Its purpose is to discuss the proposed draft permit modification to Part V of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste* (hereafter called the Hanford Site-wide Permit).

This proposed draft permit modification will add Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut to Part V of the Hanford Site-wide Permit.

This Fact Sheet is divided into six sections:

- 1.0 Hanford Site-wide Permit Background
- 2.0 Closure Unit Group Descriptions
- 3.0 Class 3 Permit Modification Process for the Closure Unit Groups
- 4.0 Proposed Modification to Part V of the Hanford Site-wide Permit
- 5.0 Procedures for Reaching a Final Decision on the Draft Permit Modification
- 6.0 State Environmental Policy Act

### **1.0 Hanford Site-wide Permit Background**

Ecology's Nuclear Waste Program (NWP) manages dangerous waste within the State by writing permits to regulate its treatment, storage, and disposal.

Ecology has the authority to regulate dangerous waste and the dangerous waste components of mixed (radioactive and dangerous) waste, under 70.105 RCW and WAC 173-303. The Hanford Site-wide Permit has requirements for the treatment, storage, and disposal of dangerous and/or mixed waste at Hanford. Ecology does not regulate waste that is solely radioactive. The United States Department of Energy (USDOE) has the exclusive authority to regulate radioactive materials and radioactive waste at Hanford.

Ecology first issued the Hanford Site-wide Permit in 1994. Since 1994, the permit has been modified several times to incorporate changes or updates and to incorporate and closeout several dangerous waste management units (DWMUs).

The Hanford Site-wide Permit provides standard and general facility conditions, as well as unit group conditions for the operation, closure, and post-closure care of DWMUs at Hanford. These DWMUs are administratively grouped into operating, closure, or post-closure unit groups in the Hanford Site-wide Permit. Each unit group may contain one or more DWMUs.

The Hanford Site-wide Permit is organized as follows:

- Part I Standard Conditions.
- Part II General Facility Conditions.
- Part III Operating Units.
- Part IV Corrective Action for Past Practice Units.
- Part V Closure Units.
- Part VI Post-Closure Units.

Upon approval and issuance of this permit modification Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut will be added to Part V of the Hanford Site-wide Permit. Approval of this permit will authorized the Permittees to begin closure activities.

## **2.0 Closure Unit Group Descriptions**

The T Plant Complex is located in the Hanford Facility's 200 West Area. T Plant's main processing building (221-T Canyon Building) was constructed in 1943 for chemical separation of plutonium from uranium fission and activation products, using the Bismuth-Phosphate/ Lanthanum-Fluoride process. Beginning in 1957, the T Plant Complex was used for decontamination operations. Currently, the primary permitted missions of the T Plant Complex are treatment and storage of dangerous and mixed waste, waste characterization, container venting, verification sampling, and waste repackaging. The T Plant Complex contains multiple operating and closing DWMUs. Six of the seven closing DWMUs included in this permit modification are located at the T Plant Complex (Figure 1). Note: The DWMUs shown on Figure 1 that are not included in this permit modification will be included in a future permit modification.

The combined Central Waste Complex (CWC) – Waste Receiving and Processing Facility (WRAP) is located in the Hanford Facility's 200 West Area. Dangerous waste and mixed waste management operations began at CWC in August 1988. WRAP began dangerous waste and mixed waste management operations in March 1997. Currently, CWC-WRAP provides container storage and treatment of dangerous and mixed waste. The CWC-WRAP contains multiple operating and closing DWMUs. One of the seven closing DWMUs included in this permit modification is located at the CWC-WRAP (Figure 2). Note: The DWMUs shown on Figure 2 that are not included in this permit modification will be included in a future permit modification.

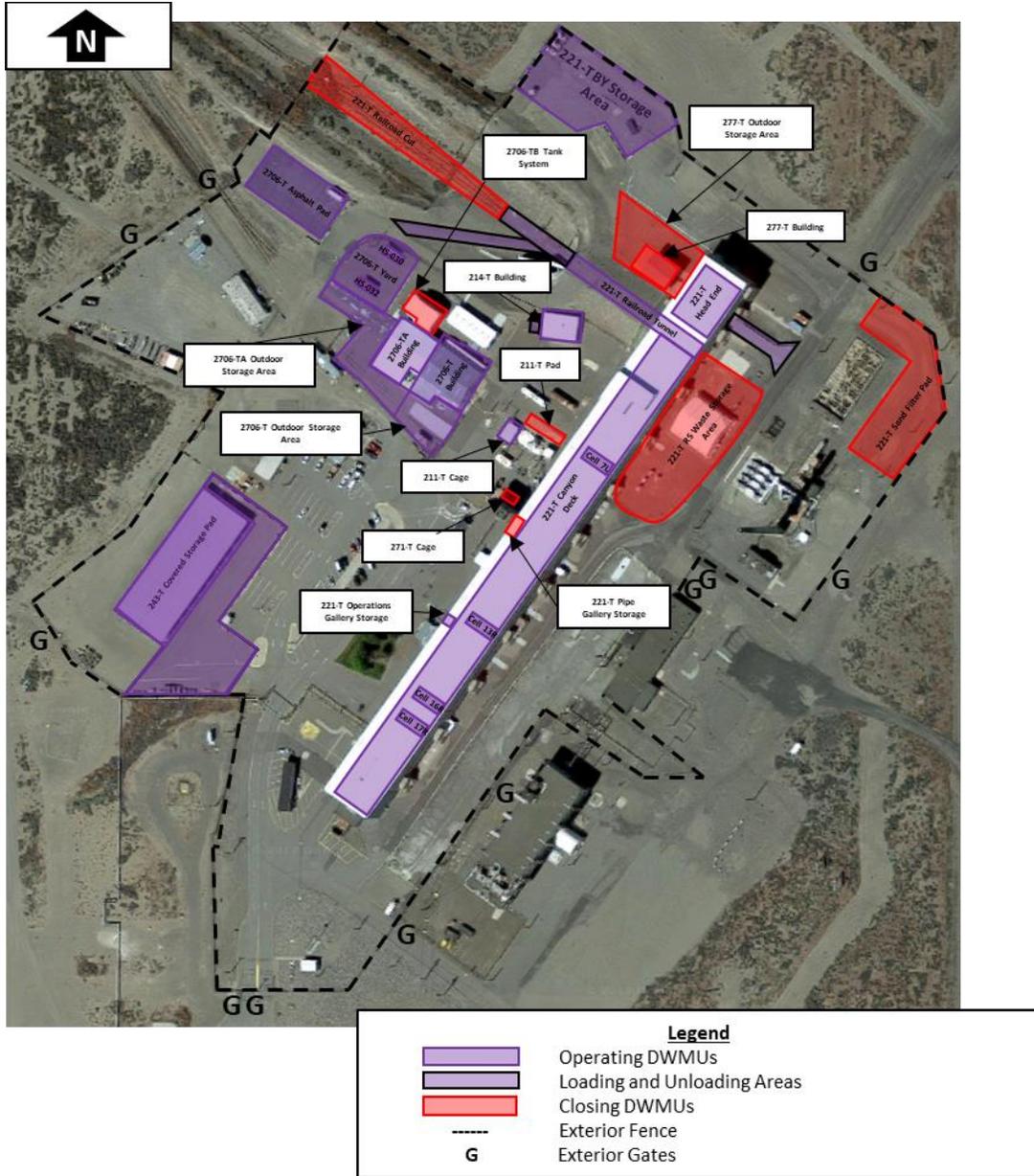


Figure 1, T Plant Complex (Month Unknown 2017)

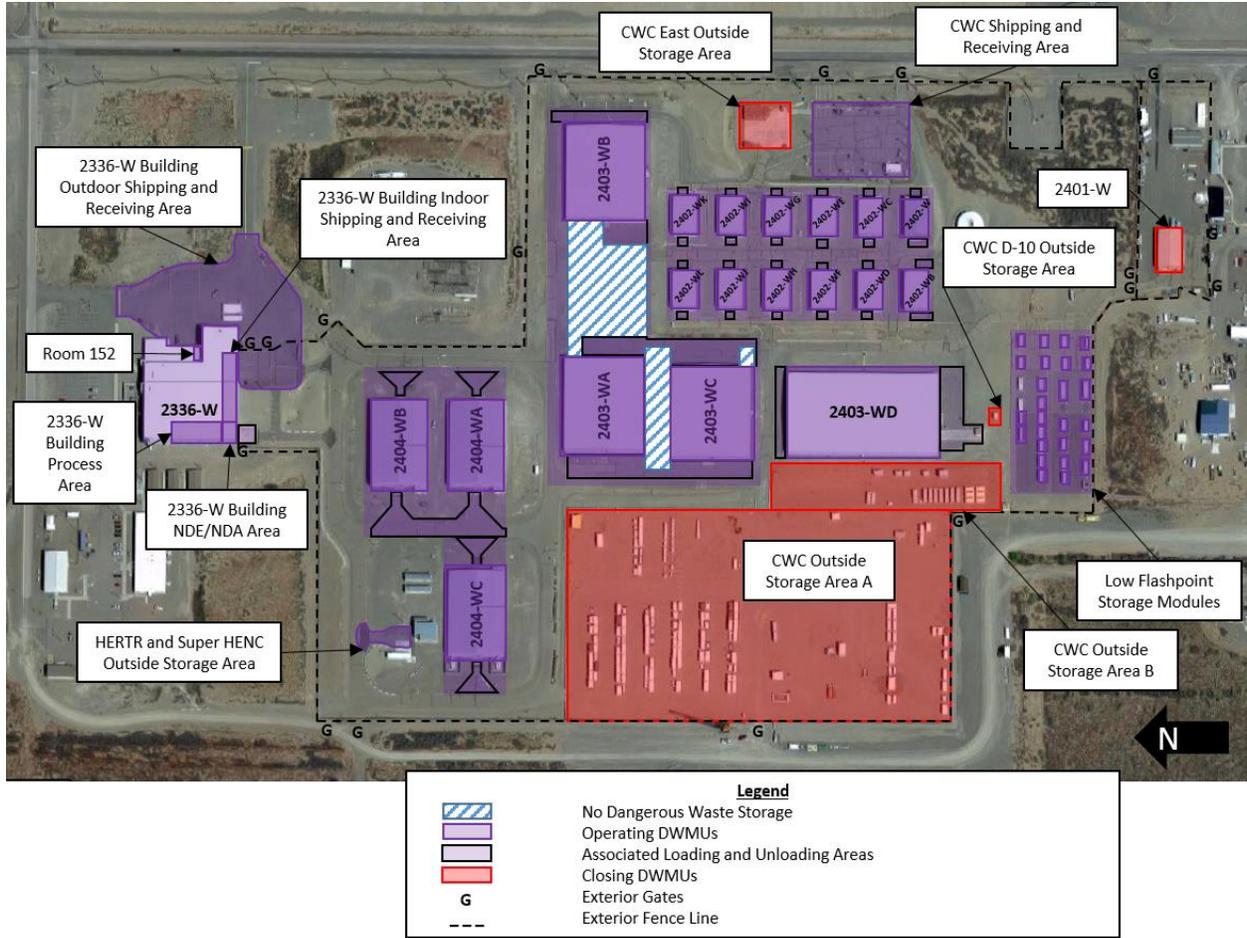


Figure 2, CWC-WRAP (Month Unknown 2017)

## 2.1 Closure Unit Group 27, 277-T Building

The 277-T Building DWMU (Figure 3) is located west of the T Plant Complex, 221-T Canyon Building and adjacent to the 277-T Outdoor Storage Area. The 277-T Building is a single story, pre-engineered, steel structure constructed of I-beams covered with corrugated steel on a concrete slab-on-grade foundation. The 277-T Building floor is uncoated concrete. The building is approximately 33 feet wide by 39 feet long by 23 feet high. The 277-T Building contains one sump on the north side of the building approximately 10 feet long by 2 feet wide that provided for the collection and drainage of water from condensate blowdown lines.

The 277-T Building stored one container of mixed waste with a total volume of 27 m<sup>3</sup>. The waste container was over-packed and stored from December 2002 until September 2003. The 277-T Building does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 277-T Building DWMU. The 277-T Building is currently used for equipment and material storage to support T-Plant operations.



*Figure 3, T Plant 277-T Building Exterior (May 2017), looking southeast*

## 2.2 Closure Unit Group 28, 277-T Outdoor Storage Area

The 277-T Outdoor Storage Area (OSA) DWMU (Figure 4) is located west of the T Plant Complex, 221-T Canyon Building and north of the 221-T Railroad Tunnel. The 277-T OSA is 95 feet on the south side by 86 feet on the west side by 135 feet on the north side by 76 feet on the east side. The 277-T OSA consists of two uncoated concrete pads in front of and behind the 277-T Building, and an asphalt area surrounding the 277-T Building. The 277-T OSA was previously used for storing containers of various sizes and volumes, and a variety of waste streams to ensure adequate capacity and operational flexibility to support T-Plant activities.

Weekly waste management area inspection records identified that the 277-T OSA may have managed dangerous and mixed waste in a central accumulation area (CAA) or satellite accumulation area (SAA). The 277-T OSA does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 277-T OSA DWMU.



*Figure 4, T Plant 277-T Outdoor Storage Area (May 2017), looking southeast*

### **2.3 Closure Unit Group 29, 271-T Cage**

The 271-T Cage DWMU (Figure 5) is adjacent to the north side of the T Plant Complex, 271-T Building. The 271-T Cage area is an uncoated concrete surface approximately 20 feet long by 10 feet wide. The 271-T Cage is defined on the south side by the 271-T Building and the remaining three sides by metal chain-link fence material. The 271-T Cage area is covered with corrugated metal roofing material.

Weekly waste management area inspection records identified that the 271-T Cage may have managed dangerous or mixed waste in a CAA or SAA. The 271-T Cage does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 271-T Cage DWMU.



*Figure 5, T-Plant 271-T Cage Outdoor Container Storage Area (May 2017), looking south [Note: The structure behind the 271-T Cage is the 271-T Building]*

## 2.4 Closure Unit Group 30, 211-T Pad

The 211-T Pad DWMU (Figure 6) is located west of the T Plant Complex 221-T Canyon Building and adjacent to the 211-T Building and ancillary equipment. The 211-T Pad area is a curbed, uncoated, concrete pad approximately 59 feet long by 20 feet wide that slopes into a blind sump. The 211-T Pad was generally used as secondary containment for tanker trucks that were used for non-waste chemical transfers.

Containerized dangerous and mixed waste was also stored on the 211-T Pad from October 1985 through April 2006. Waste management records indicate that 53 containers of mixed waste was stored, with a total volume of 83.9 m<sup>3</sup>. The 211-T Pad does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 211-T Pad DWMU.



*Figure 6, T Plant 211-T Pad Area Photo (June 2017), looking east*

## 2.5 Closure Unit Group 37, 221-T Sand Filter Pad

The 221-T Sand Filter Pad DWMU (Figure 7) is located to the northeast of the north end of the T Plant Complex, 221-T Canyon Building. The 221-T Sand Filter Pad is an uncovered gravel area approximately 180 feet long by 60 feet wide. The 221-T Sand Filter Pad was previously used for storing containers of various sizes and volumes, and a variety of waste streams to ensure adequate capacity and operational flexibility to support T-Plant activities.

Weekly waste management area inspection records identified that the 221-T Sand Filter Pad may have managed nondangerous, dangerous, and mixed waste in a CAA or SAA. The 221-T Sand Filter Pad does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 221-T Sand Filter Pad DWMU.



*Figure 7, T Plant 221-T Sand Filter Pad (March 2018), looking northeast*

## **2.6 Closure Unit Group 39, 2401-W Waste Storage Building**

The 2401-W Waste Storage Building DWMU (Figure 8) is located on the south end of the Central Waste Complex (CWC). It is a pre-engineered steel structure approximately 50 feet wide by 80 feet long by 20 feet high (to the eave). The foundation is integrated into a perimeter concrete curb 6 inches above grade. The floors were coated with an epoxy resin floor surfacing system that was compatible with the stored waste.

The 2401-W Waste Storage Building stored 318 containers of dangerous and mixed waste with a total volume of 203 m<sup>3</sup>. The 2401-W Waste Storage Building also stored dangerous and mixed waste in a CAA. Dangerous waste was first stored in May 1989. The last dangerous waste was removed in November 2010 from the CAA. The 2401-W Waste Storage Building does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 2401-W Waste

Storage Building DWMU. The 2401-W Waste Storage Building is currently used for equipment and material storage, as well as recyclable and universal waste storage to support CWC-WRAP activities.



*Figure 8, CWC-WRAP 2401-W Building (East) (February 2018), looking southeast*

## **2.7 Closure Unit Group 41, 221-T Railroad Cut**

The 221-T Railroad Cut DWMU (Figure 9) is an uncovered gravel area with railroad tracks located west of the north end of the T Plant Complex 221-T Canyon Building, outside of the 221-T Railroad Tunnel. The 221-T Railroad Cut is approximately 309 feet long by 50 feet wide at the fence and 33 feet wide at the 221-T Railroad Tunnel end for a total approximate area of 14,603 square feet. The 221-T Railroad Cut was used to store mixed waste in a CAA or SAA, while being transferred into or out of the 221-T Railroad Tunnel.

Weekly inspection records of CAAs and SAAs identified that the 221-T Railroad Cut may have managed nondangerous, dangerous, and mixed waste. The 221-T Railroad Cut does not currently store dangerous or mixed waste. Future storage of dangerous or mixed waste is not authorized within the 221-T Railroad Cut DWMU.



*Figure 9, T Plant 221-T Railroad Cut (October 2017), looking southeast*

### **3.0 Class 3 Permit Modification Process**

In June 2013, the U.S. Environmental Protection Agency (EPA) issued a Consent Agreement and Final Order (CAFO) against the U.S. Department of Energy (USDOE) for violations of the Resource Conservation and Recovery Act of 1976 (RCRA) program at the Hanford Facility's Solid Waste Operations Complex (SWOC). The SWOC includes the T Plant Complex, CWC-WRAP, and Low-level Burial Grounds Trenches 31, 34, and 94. The EPA CAFO was based on information collected during a 2011 EPA inspection.

The violations included:

- Storage of hazardous waste without a permit.
- Failure to meet closure plan requirements.
- Failure to submit closure notice and closure plans.
- Failure to comply with land disposal restriction requirements.

Changes to the Hanford Site-wide Permit are required by the EPA CAFO issued against USDOE. These changes are summarized as follows:

- Stop receiving waste in the DWMUs listed in the CAFO.
- Submit closure plans to Ecology within 120 days of the effective date of the CAFO, for the following DWMUs: T Plant 271-T Cage; T Plant 211-T Pad; T Plant 221-T Sand Filter Pad; T Plant 221-T R5 Waste Storage Area; T Plant 277-T Outdoor Storage Area; CWC Outside Storage Area A; CWC Outside Storage Area B; and Low-level Burial Grounds FS-1 Outdoor Container Storage Area.
- Immediately comply with all applicable final facility standards for the management of dangerous waste found in WAC 173-303-600(l) for the DWMUs listed in the CAFO.
- Submit closure plans to Ecology for the T Plant 221-T Railroad Tunnel and CWC 2401-W Building within 120 days of the effective date of the CAFO, unless prior to that date Ecology approves an extension pursuant to 40 Code of Federal Regulations (CFR) 265.112(d)(2), as incorporated and modified by reference by WAC 173-303-400.
- Immediately stop the placement of prohibited dangerous waste in LLBG Trenches 31 and 34, unless the waste meets land disposal treatment standards found in WAC 173-303-140.

On October 11, 2013, USDOE submitted a Class 3 permit modification request to Ecology that included nine closure plans for the DWMUs listed in the EPA CAFO. On October 18, 2013 USDOE submitted

five additional closure plans for DWMUs not listed in the EPA CAFO (non-CAFO). In all, 14 closure plans were submitted. The USDOE issued the closure plans for a 60-day public comment period as required by WAC 173-303-830(4)(c) that began on October 30, 2013 and ended on January 6, 2014. The Permittees also held a public meeting on December 9, 2013, at the Richland Public Library. Fifty-three public comments were received on the closure plans during the public comment period.

Ecology performed a completeness review as required in WAC 173-303-840(1)(b) and notified the Permittees on July 29, 2015 that the permit application was incomplete (15-NWP-145).

Since 2015, Ecology has been working with the USDOE to get the CAFO and non-CAFO DWMU closure plans into the Hanford Site-wide Permit. Seven of the fourteen closure plans are part of this Class 3 permit modification, and include the following:

- The 211-T Pad, 221-T Sand Filter Pad, 271-T Cage, 277-T Outdoor Storage Area, and the 2401-W Waste Storage Building (CAFO).
- The 221-T Railroad Cut and the 277-T Building (non-CAFO).

One of the 14 identified closing DWMUs (Low-Level Burial Grounds FS-1 Outdoor Container Storage Area) has completed closure. Ecology accepted clean closure certification on October 25, 2016, and Low-Level Burial Grounds FS-1 Outdoor Container Storage Area was removed from the Hanford Site-wide Permit on December 14, 2016.

From 2015 to 2019, Ecology worked with the Permittees to resolve multiple closure plans issues such as closure plan schedules, closure performance standards, decontamination methods, and site-specific data quality objectives. These issues and their resolution are detailed below. The Permittees delivered a second submittal and supporting documentation for the seven closure plans in this permit modification on August 14, 2008 (18-AMRP-0150), October 16, 2018 (19-AMRP-0009) and November 6, 2018 (19-AMRP-0021). For five of the seven closure plans, Ecology and the Permittees could not reach agreement on focused sampling requirements for determining soils meet clean closure performance standards as required by WAC 173-303-610(2)(b)(i). For four of the seven closure plans, Ecology and the Permittees also could not reach agreement on clean closure standards for concrete structures as required by WAC 173-303-610(2)(b)(ii).

The following changes to USDOE's 2013 permit modification request submittal have been made in this draft permit modification based on public comments received, Ecology's completeness review, USDOE's 2018 submittals, and workshops between Ecology and the Permittees:

**Closure Plan Schedules:** Ecology found closure plan schedules were incomplete. The Permittees agreed to include closure schedules for each DWMU that detail the total time required to close, and the time required for intervening closure activities in accordance with WAC 173-303-610(3)(a)(vii). Complete closure schedules are now included in each DWMU closure plan.

**Soil Closure Performance Standards:** There were several issues with determining soil closure performance standards (CPS) and they are presented below.

- WAC 173-303-610(2)(b)(i) requires the use of the Model Toxic Control Act (MTCA) regulations (WAC 173-340) to set numeric cleanup levels for soils, calculated according to MTCA Method B, or in some cases MTCA Method A. The CPS proposed by the Permittees were based on MTCA Method C, industrial cleanup standards, which is specifically excluded by WAC 173-303-610(2)(b)(i) for clean closures. Ecology's final determination on the SWOC CPS was transmitted to the Permittees in letter 17-NWP-022. The CPS in each closure plan is now based on an evaluation of all exposure pathways, using MTCA Method B (or in some cases MTCA Method A) cleanup levels were applicable.
- Since many of the SWOC DWMUs did not have complete records of what waste had been stored within them or the waste types were unknown, it was decided that all the known waste

constituents at SWOC facilities would be used on the CPS list. Most of the DWMUs, will be sampled and analyzed for all the SWOC dangerous waste constituents. For DWMUs with adequate records of specific waste stored there, only those waste constituents will be addressed.

- Due to the length of time needed to get these seven closure plans ready for public comment, some changes to the information MTCA uses to calculate numeric values occurred. Until a closure plan actually becomes part of the Hanford Site-wide Permit, the calculated numeric CPS values are subject to revaluation and potential change. The required minor changes were made to the SWOC CPS table issued in Ecology letter 17-NWP-022 and discussed and shared with the permittees. In addition, the Toxic Cleanup Program’s *MTCA Cleanup Levels and Risk Calculation (CLARC) Data Tables* were updated in 2019. The CPS values in the seven closure plans going out for public comment reflect these changes.

**Revised Focused Sampling Strategy:** Ecology performed a closure field evaluation (i.e., a walk down to verify closure sampling locations) of the DWMUs on November 11, 2018. During the walk down, Ecology observed a number of cracks and other openings in the concrete structures through which waste, debris, or decontamination media could be released to the environment. In order to verify that the soils underlying these concrete structures meet the clean closure performance standard, Ecology determined that additional soil sampling will be necessary. This is consistent with [Ecology Publication 94-111 “Guidance for Clean Closure of Dangerous Waste Units and Facilities”](#) (Publication #94-111), (see Sections 4.0, 7.2, and 7.3). Ecology identified additional focused soil sampling locations based on site coverage; missing coatings; location of cracks, construction joints/seams, and drainage areas/sumps; and penetrations of the concrete pads by posts and rails. These additional soil sample locations are included in the closure plans. Ecology is requiring the following changes in focused sampling:

<b>Changes to Focused Sampling</b>		
<b>DWMU</b>	<b>Permittee 2018 Proposal</b>	<b>Ecology Determination</b>
271-T Cage	No sampling	Six (6) soil samples
277-T Outdoor Storage Area	Three (3) soil samples	Ten (10) soil samples
277-T Building	One (1) soil sample	Six (6) soil samples; one (1) concrete chip sample
211-T Pad	One (1) soil sample	Twelve (12) soil samples; one (1) concrete chip sample
2401-W Waste Storage Building	No sampling	Six (6) soil samples

Ecology also added non-statistical concrete chip sampling for the 271-T Cage, 277-T Outdoor Storage Area, 277-T Building, and 211-T Pad closure plans to meet site-specific decontamination method evaluation criteria requirements (please see Closure Performance Standards for Concrete Surfaces discussion below). The basis for the revised sampling strategy for each closure plan is further detailed in Sections 4.1.1 through 4.1.7 of this Fact Sheet. Please note, each DWMU closure is site-specific, and decisions made for individual DWMUs may not be used as a precedent for determining closure requirements for other DWMUs.

**Closure Performance Standards for Concrete Surfaces:** In the Permittees’ 2013 permit modification request (13-ESQ-0074; 14-ESQ-0003), the Permittees originally proposed statistical concrete chip sampling/core sampling to determine if concrete structures meet clean closure standards for the 271-T Cage, the 277-T Outdoor Storage Area, and the 211-T Pad. This proposed approach involved taking 20 concrete chip or core samples at each DWMU. For the 277-T Building and 2401-W Waste Storage Building, the Permittees originally proposed decontamination in accordance with alternative treatment standards outlined in Publication #94-111 to a “clean debris surface”; and rinsate sampling to confirm clean closure.

From 2016 through 2018, Ecology and the Permittees had numerous workshop, meeting discussions, and letter exchanges regarding closure performance standards for concrete surfaces. During this time, the Permittees moved away from the originally proposed concrete sampling. Their reasoning was that the sampling would damage the concrete surfaces, and they wanted to reuse these areas for other non-dangerous waste management purposes after clean closure. Ecology suggested the permittees consider a site-specific decontamination method as described in [Ecology Publication 94-111, "Guidance for Clean Closure of Dangerous Waste Units and Facilities."](#) A proposed site-specific decontamination method must include evaluation criteria for determining whether decontamination was successful. The Permittees proposed the site-specific decontamination method of "high pressure steam or water sprays," and the evaluation criterion of "clean debris surface."

In November 2016, the Permittees stated in letter 17-AMRP-0016 they disagreed with concrete sampling as they believed it was not a RCRA requirement. The Permittees also stated that no closure performance standards exist for concrete which would be used to demonstrate closure, and that soil is the only media addressed in closure performance standards. In July 2017, in letter 17-AMRP-0217 the Permittees proposed to treat concrete surfaces using a physical extraction method from 40 CFR 268.45 Table 1, to meet the "clean debris surface" standard. The treatment methods listed were high pressure steam or water sprays; water washing and spraying; and liquid vapor phase solvent extraction as physical extraction methods. In August 2017, Ecology responded in letter 17-NWP-100 and clarified that only high pressure steam and water sprays are physical extraction methods; water washing and spraying, and liquid or vapor phase solvent extraction are chemical extraction methods. Ecology also identified the performance standard for physical extraction of concrete is the removal of at least 0.6 cm of the surface layer and treatment to a "clean debris surface". In October 2017, the Permittees responded in letter 18-AMRP-0005 and provided example closure plan language that included a proposed decontamination method of treating to a "clean debris surface" using high pressure steam and water sprays. They also proposed if "clean debris surface" cannot be achieved through the surface decontamination method, an extraction of 0.6 cm will be performed using physical extraction techniques according to 40 CFR 268.45 Table 1 which could include abrasive blasting; scarification, grinding, and planing; and/or spalling. In October 2017, Ecology responded in letter 17-NWP-150 accepting modifications regarding the "clean debris surface" standard. The Permittees began moving forward with preparing the closure plans for formal submittal.

In May 2018, Ecology clarified in letter 18-NWP-070 that options for decontaminating concrete include either meeting the performance standard in 40 CFR 268.45 Table 1 (which includes removal of the top 0.6 cm of the concrete surface to a "clean debris surface"), or to propose a site-specific decontamination method as described in Publication #94-111. Ecology further clarified that if Permittees propose a site-specific decontamination method as described in Publication #94-111 and include the evaluation criteria of "clean debris surface," whether or not the area meets "clean debris surface" will fall to the Independent Qualified Registered Professional Engineer that certifies closure. The Permittees continued to move forward with preparing the closure plans for formal submittal, and submitted four of the closure plans on August 14, 2018 (18-AMRP-0150). Supplemental photographs and sample figures were provided on October 16, 2018 (19-AMRP-0009).

On October 31 and November 5, 2018 Ecology discussed the four closure plan submittals with Ecology's Washington State permitting oversight program [Hazardous Waste and Toxics Reduction Program (HWTR)]. After consulting with HWTR, Ecology determined that for these closing DWMUs, "clean debris surface" is not an appropriate evaluation criterion for the site-specific decontamination method of high pressure steam and water sprays, and that some sampling to demonstrate successful decontamination of the concrete will be required. On November 5, 2018, Ecology briefed the Permittees on the issue and requested the remaining closure plan submittals be delayed until an appropriate evaluation criterion could be agreed upon. Ecology also requested a walk down of the closing units in order to verify sampling locations. The Permittees informed Ecology that submittal of the remaining closure plans was already in progress and could not be delayed. The Permittees submitted the remaining closure plans on November

6, 2018 (19-AMRP-0021). On November 11, 2018 Ecology performed a walk down of the closing units to verify closure sampling locations. On December 17, 2018 Ecology shared feedback from the walk down and requested changes to five of the CAFO closure plans. On January 14, 2019 Ecology placed the draft permit modification on hold until changes to the five closure plans could be resolved. On February 21, 2019 Ecology provided the Permittees a revised sampling approach for the five closure plans. On February 25, 2019 Ecology and the Permittees discussed the revised sampling approach and needed closure plan changes. The Permittees responded that any additional changes must be made by Ecology because the closure plans have already been submitted, and that the Permittees will help provide technical support, as needed. Ecology began closure plan revisions. In a June 4, 2019 email the Permittees agreed to change to using a physical extraction method from 40 CFR 268.45, Table 1, and remove 0.6 cm of the concrete to a “clean debris surface” for the 2401-W Waste Storage Area. On July 15, 2019 Ecology discussed needed changes for the five closure plans, and the need for technical assistance. Ecology provided an outline of needs and a revised sampling figures for each of the five closure plans. On July 29, 2019 the Permittees informed Ecology they do not concur with Ecology’s changes, and offered two options: move forward with the closure plans submitted in 2018 (with minor changes), or Ecology can move forward with their changes without technical assistance from the Permittees. Ecology chose to move forward without technical assistance from the Permittees, and proceeded to develop the revised sampling strategy, adding concrete chip sampling as the evaluation criterion for determining if decontamination of concrete surfaces using high pressure steam or water sprays is successful.

The basis for this decision is as follows: Clean closure requires the removal or decontamination of all contaminated structures associated with the closing DWMU. WAC 173-303-610(2)(b)(ii) requires Ecology to establish appropriate clean closure standards for contaminated structures “on a case-by-case basis in accordance with the closure performance standards of WAC 173-303-610(2)(a)(ii) and in a manner that minimizes or eliminates post-closure escape of dangerous waste constituents.” Because WAC Chapter 173-303 does not establish specific requirements for the decontamination of structures, Ecology considers comparable treatment standards from the Land Disposal Restrictions (LDR) program in making case-by-case determinations of the appropriate clean closure requirements.

With respect to contaminated concrete structures, Ecology has determined that the LDR treatment standard for concrete “debris” is an appropriate decontamination standard for clean closure. See Publication #94-111, Section 5.3.1. This is consistent with guidance from the U.S. Environmental Protection Agency (EPA) on the subject:

*Existing closure standards for hazardous waste management facilities require “decontamination” of contaminated structures and equipment. See, e.g., §§ 264.114 and 265.114. The precise meaning of decontamination presently is determined on a case-by-case basis through review of the facility’s closure plan. ... The Agency believes that the treatment methods in today’s rule would always satisfy the decontamination standard in the closure provisions. After all, the purpose of these treatment methods is to decontaminate.*

[57 Fed. Reg. 37194, 31243, Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris (Aug. 18, 1992)].

Accordingly, Section 5.6 of Publication #94-111 sets forth two options for decontaminating concrete structures:

1. Use a concrete debris-specific LDR treatment standard specified in 40 CFR 268.45 Table 1 (incorporated by reference at WAC 173-303-140(2)(a)); or
2. Propose a site-specific method of decontamination and evaluation criteria.

The Permittees proposed using “high pressure steam or water sprays” to decontaminate the concrete structures at issue. This is one of the Physical Extraction methods identified in 40 CFR 268.45, Table 1. However, this method of decontamination must be accompanied by removal of at least 0.6 cm of the

surface layer and treatment to a “clean debris surface” in order to meet the LDR treatment standard for concrete debris. The reason for removing 0.6 cm of the surface layer before applying the performance standard of “clean debris surface” is to remove any contamination that has migrated into the porous concrete surface.

As described by EPA in the preamble to the final rule for Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris:

*(b) Brick, Cloth, Concrete, Paper, Rock, Pavement, and Wood. The performance standard for these types of debris requires: (1) Removal of at least 0.6 centimeters of the surface layer, and (2) treatment to a "clean debris surface." Removal of 0.6 centimeters of the surface layer is required for these types of debris because they may be porous and toxic contaminants may [be] absorbed within the debris.*

[57 Fed. Reg. at 37230].

Additionally, EPA explained that for some debris types, the performance standard cannot be met using certain treatment technologies, and gives as an example high pressure steam and water sprays used to treat brick or concrete.

*An example of where the performance standard cannot be met for a technology/debris combination is high pressure steam and water spray used to treat brick or concrete. As discussed below, because these debris types are porous and toxic contaminants may be adsorbed below the surface of the debris, the performance standard requires removal of at least the outer 0.6 centimeter surface layer. This technology cannot meet that performance standard for those types of debris. Rather than explicitly prohibiting such practices, however, such practices will be precluded because of the inability to comply with the standards.*

[57 Fed. Reg. at 37229].

For the 271-T Cage, the 277-T Outdoor Storage Area, the 277-T Building, and the 211-T Pad DWMUs, the Permittees do not want to remove 0.6 cm of the surface layer of concrete structures that need to be decontaminated, as they plan to reuse these areas for other purposes after clean closure. As a result, the Permittees cannot demonstrate compliance with the LDR treatment standard for concrete debris using high pressure steam or water sprays. Ecology requested the Permittees propose appropriate evaluation criteria (e.g., concrete chip sampling). The Permittees declined to propose an evaluation criterion other than “clean debris surface.”

Ecology has agreed the Permittees may continue to use high pressure steam or water sprays as a site-specific method of decontamination for concrete structures. Ecology has also determined that “clean debris surface” cannot be used as the evaluation criterion to determine clean closure unless at least 0.6 cm of the surface layer is first removed, for the reasons described above. As such, Ecology is requiring non-statistical concrete chip sampling to be used as the evaluation criterion to demonstrate successful decontamination of the concrete structures.

The following table outlines changes in the concrete closure performance standards from the Permittees’ original submittal, their second submittal, and Ecology’s final determination.

<b>Changes to Closure Performance Standards for Concrete Surfaces</b>			
<b>DWMU</b>	<b>Permittee 2013 Original Proposal</b>	<b>Permittee 2018 Proposal</b>	<b>Ecology Determination</b>
271-T Cage	No decontamination; twenty (20) statistical concrete chip/core samples to confirm clean closure.	Decontaminate using high pressure steam or water sprays to a “clean debris surface.”	Decontaminate using high pressure steam or water sprays; confirm clean closure by taking

<b>Changes to Closure Performance Standards for Concrete Surfaces</b>			
<b>DWMU</b>	<b>Permittee 2013 Original Proposal</b>	<b>Permittee 2018 Proposal</b>	<b>Ecology Determination</b>
			five (5) non-statistical concrete chip samples.
277-T Outdoor Storage Area	No decontamination; twenty (20) statistical gravel/soil samples, & concrete chip/core samples to confirm clean closure. (Note: asphalt areas & concrete pads were combined into one area, & Ecology was unable to differentiate gravel/soil samples from concrete samples).	Decontaminate concrete pads using high pressure steam or water sprays to a “clean debris surface.” (Note: Statistical soil sampling is proposed to confirm clean closure of the gravel/asphalt area.)	Decontaminate concrete pads using high pressure steam or water sprays; confirm clean closure by taking nine (9) non-statistical concrete chip samples. (Note: Ecology agrees with statistical soil sampling of the gravel/asphalt area to confirm clean closure.)
277-T Building	Decontaminate using alternative treatment standards in Publication #94-111 to a “clean debris surface”; sample decontamination rinsate to confirm clean closure.	Decontaminate using high pressure steam or water sprays to a “clean debris surface.”	Decontaminate using high pressure steam or water sprays; confirm clean closure by taking six (6) non-statistical concrete chip samples.
211-T Pad	No decontamination; twenty (20) statistical concrete chip/core samples to confirm clean closure.	Decontaminate using high pressure steam or water sprays to a “clean debris surface.”	Decontaminate using high pressure steam or water sprays; confirm clean closure by taking six (6) non-statistical concrete chip samples.
2401-W Waste Storage Building	Decontaminate using alternative treatment standards in Publication #94-111 to a “clean debris surface”; sample decontamination rinsate to confirm clean closure.	Decontaminate using high pressure steam or water sprays to a “clean debris surface.” If “clean debris surface” is not met, follow with removal of 0.6 cm of the surface layer using physical extraction methods from 40 CFR 268.45, Table 1.	Decontaminate using physical extraction method of abrasive blasting; scarification, grinding, and planing; and/or spalling to remove at least 0.6 cm of the concrete surface layer to a “clean debris surface.”

The concrete chip samples will be analyzed and compared against the closure performance standards for soils (per guidance found in Publication #94-111, Sections 5.5 and 5.6), as originally proposed in the Permittees’ 2013 permit modification request (13-ESQ-0074; 14-ESQ-0003). If closure performance standards are met, the concrete will be considered clean.

Where a site-specific decontamination method is used, non-statistical concrete chip sampling and standards for evaluating the samples are now included in the DWMU closure plans. The decontamination method and associated evaluation criteria that have been selected for these closures are consistent with Publication #94-111 (see Section 5.6) as well as other Washington State dangerous waste permits.

**Data Quality Objectives (DQO):** Ecology found the DQO information supporting the Sampling and Analysis Plans was insufficient, as it relied heavily on the 200-MG-1 Operable Unit DQO. Ecology transmitted letter 17-NWP-148 to the Permittees explaining the need for site-specific DQOs, and for the removal of the 200-MG-1 DQO information. In response letter 18-AMRP-0100, the Permittees agreed to remove the 200-MG-1 DQO information from the closure plans and agreed to add site-specific DQO information. Site-specific DQO information is now included in each DWMU closure plan. This includes a complete evaluation of all environmental pathways and associated closure performance standards. Each DWMU closure plan was reevaluated and changes made to the sampling and analysis plans as necessary, to reflect the new DQO information.

The draft permit modification to Rev. 8C of the Hanford Site-Wide Permit is 8C.2018.6D and is available for public review in locations listed in Section 5.0.

Ecology addressed public comments received during the Permittees' comment period in a response to comments document. The response to comment document accompanies this draft permit modification, and is available online at <http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>.

#### **4.0 Proposed Modification to Part V of the Hanford Site-wide Permit**

This proposed draft permit modification 8C.2018.6D will add Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Building Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut to Part V of the Hanford Site-wide Permit. The draft permit modification is the second portion of a Class 3 modification and includes:

- Unit group specific descriptions
- Unit group specific permit conditions
- Addendum H, closure plans

#### **4.1 Closure Actions**

Closure of the DWMUs will be conducted in accordance with the approved Addenda H, Closure Plans. Clean closure will be based on requirements in WAC 173-303-610(2), "Closure performance standard." Those regulations require closure of the facility in a manner that:

- Minimizes the need for further maintenance.
- 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 runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere.
- Returns the land to the appearance and use of surrounding land areas, to the degree possible, given the nature of the previous dangerous waste activity.

##### **4.1.1 Closure Actions for Closure Unit Group 27, 277-T Building**

Clean closure for the 277-T Building requires closure performance standards be met for both the concrete floor and sump, and soil beneath the concrete. The concrete surfaces will be decontaminated using the site-specific decontamination method of high pressure steam or water sprays. Once decontamination is complete, chip sampling of the concrete surfaces will be conducted to verify whether decontamination was successful. To verify underlying soils are clean, sampling beneath the concrete pad and sump will be

conducted. Results from chip and soil samples will be analyzed to ensure closure performance standards are met.

Ecology and the Permittees were unable to come to agreement on the number and location of samples needed to verify clean closure standards have been met for the concrete surfaces and underlying soil. The Permittees proposed one soil sample beneath the sump, and visual verification of “clean debris surface” for the concrete surfaces. For the reasons described above, Ecology determined this proposal was not adequate to achieve clean closure standards. Accordingly, Ecology added additional sampling requirements to the closure plan for the 277-T Building based on the following:

- Five focused soil samples. Justification – Five additional focused soil samples were added based on Ecology’s professional judgement, visual inspection performed by the Permittees, and walk down performed by Ecology. Publication #94-111, Section 7.2.2 states, “*Focused sampling involves selective sampling of areas where contamination is expected or releases have been documented. Focused sampling should be conducted in addition to grid sampling where there is evidence of leaks or spills or potential for a dangerous waste constituent to migrate.*” CHPRC performed a visual inspection on June 15, 2015 (see Attachment A in the 277-T Building Addendum H, Closure Plan). This 2015 inspection identified six total focused soil sample locations: three low point samples, two seam samples, and one sump sample. The concrete construction joint/seams within the 277-T Building are considered possible avenues for waste to migrate to the soil below the concrete. The low end of the sloping concrete floor and sump are also considered possible avenues for waste to migrate to the soil, as these are areas where waste could accumulate. Ecology performed a walk down on November 11, 2018 to verify these additional sample locations, and is in agreement with the Permittees’ 2015 visual inspection results that these six focused soil samples will provide an adequate representation of the soil below 277-T Building.
- Six non-statistical grid concrete chip samples, and one focused concrete chip sample. Justification – The decision to use “non-statistical grid concrete chip sampling” was to validate successful decontamination of the concrete surface; therefore, a non-biased approach was incorporated (hence the random start Visual Sample Plan<sup>1</sup> derived grid) and the results directly compared to the closure performance standards (hence the non-statistical evaluation [direct comparison]). Six non-statistical grid concrete chip samples were added based on Ecology’s professional judgement, as an evaluation criterion for determining effectiveness of the proposed site-specific decontamination method. Per Ecology Publication #94-111, Section 5.6.1, “*If high-pressure steam or water washing is used, the site-specific decontamination performance standard might involve comparing concrete chip samples with MTCA unrestricted site use cleanup levels.*” The use of non-statistical grid sampling was determined to be the least biased method for determining if the closure performance standards were achieved. The number of samples chosen was based on the building floor slab being uncoated, and the uncertainty of whether mixed waste residues are present. The number of samples was also based on the current physical condition of the building, building size of approximately 1,287 square feet, maximum waste storage volume of 27 m<sup>3</sup>, waste in storage less than one year, and for achieving equal representation of the entire building. A random start was chosen to eliminate bias associated with selecting sampling locations. One focused concrete chip sample was added at the sump based on Ecology’s professional judgement. The sump is the lowest point of the 277-T Building and is considered to have the highest potential for contamination to migrate.

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<sup>1</sup> **Visual Sample Plan.** The Visual Sample Plan (<https://vsp.pnnl.gov/>) is a tool used throughout Washington State and nationally, that was developed by the Pacific Northwest National Laboratory. It is an aid to help design defensible and statistically valid sampling programs for a variety of applications.

#### 4.1.2 Closure Actions for Closure Unit Group 28, 277-T OSA

Clean closure for the 277-T OSA requires closure performance standards be met for the concrete, underlying soil, and asphalt. For concrete, a site-specific decontamination method will be used and chip sampling will be conducted to verify whether decontamination was successful. For soils, sampling of the soil beneath the concrete pads and asphalt will be conducted. Results from chip and soil samples will be analyzed to ensure closure performance standards are met.

For asphalt, if analytical results from soil sampling below the asphalt meet closure performance standards, it will be assumed the asphalt meets closure performance standards as well. The assumption that the asphalt meets closure performance standards if the underlying soil meets closure performance standards is based on Ecology's professional judgement, and Ecology's walk down on November 11, 2018. Asphalt is porous by nature, but when new or resealed, has the ability to repel water. The condition of the 277-T OSA asphalt is:

- Weathered and faded with little visible tar-like binding material;
- Does not visibly repel water (i.e., most of the surface absorbs water and remains wet for some time after rain events); and
- The surface is visibly broken and rough (i.e., looks more like gravel than asphalt).

This is an indication of high porosity and loss of the organic material that binds asphalt and aggregate together. For these reasons, it can be inferred that any contamination on the asphalt surface would have migrated to the underlying soil. If the underlying soil meets closure performance standards, Ecology will consider the asphalt to have met closure performance standards as well.

Ecology and the Permittees are in agreement on the 21 statistical grid soil samples. However, Ecology and the Permittees were unable to come to agreement on the number and location of samples to verify clean closure standards are met for the concrete pads and soil underlying the concrete pads. The Permittees originally proposed two soil samples at concrete pad expansion joints, and one soil sample at the steam condensate blowdown drain. Ecology added sampling requirements for the 277-T OSA based on the following:

- Six focused soil samples for the NE (front) concrete pad. Justification – Four focused soil samples were added to the Permittees proposed two samples, (for a total of six), based on Ecology's professional judgement and Ecology's walk down on November 11, 2018. Ecology chose two sampling locations where at least two expansion joints intersected, and two areas where piping penetrated the surface of the concrete pad to the soil below. These areas are considered to have the highest potential for contamination to migrate to the soil beneath the concrete pad. Per Ecology Publication #94-111, Section 7.2.2, "*Focused sampling should be conducted in addition to grid sampling where there is evidence of leaks or spills or potential for a dangerous waste constituent to migrate.*" Additionally, this pad is uncoated and it is uncertain if the 277-T OSA was used to manage dangerous and mixed waste or if dangerous or mixed waste residues are present.
- Three focused soil samples for the SW (back) concrete pad. Justification – Three focused soil samples were added based on Ecology's professional judgement and Ecology's walk down on November 11, 2018. Two sampling locations were chosen at the low end of the sloping concrete pad where contamination would most likely migrate. One sampling location was identified adjacent to the manhole, which is another area with a likely potential for waste to migrate. Additionally, this pad is uncoated and it is uncertain if the 277-T OSA was used to manage dangerous and mixed waste or if dangerous or mixed waste residues are present.
- Steam condensate blowdown drain line: The Permittees originally proposed a focused soil sample at the steam condensate drain line. Based on Ecology's professional judgement and Ecology's walk down on November 11, 2018, Ecology agrees with this sampling location. Any

waste from the 277-T Building sump would have drained through this line, which is in direct contact with the soil.

- Five non-statistical grid concrete chip samples for the NE pad and four non-statistical grid concrete chip samples for the SW pad. Justification – A total of nine non-statistical grid concrete chip samples were added based on Ecology’s professional judgement, as an evaluation criterion for determining effectiveness of the proposed site-specific decontamination method per Ecology Publication #94-111, Section 5.6.1, “*If high-pressure steam or water washing is used, the site-specific decontamination performance standard might involve comparing concrete chip samples with MTCA unrestricted site use cleanup levels.*” The use of non-statistical grid sampling was determined to be the least biased method for determining if the closure performance standards were achieved. The number of samples was based on the pads being uncoated and the uncertainty of whether the 277-T OSA was used to manage dangerous and mixed waste or if dangerous or mixed waste residues are present. The number of samples was also based on the current physical condition of each pad, the size of each pad [the NE (front) pad is approximately 660 square feet, and the SW (back) pad is approximately 594 square feet], and for achieving equal representation of the entire area of each pad. A random start was chosen to eliminate bias associated with selecting sampling locations.

#### **4.1.3 Closure Actions for Closure Unit Group 29, 271-T Cage**

Clean closure for the 271-T Cage requires closure performance standards be met for both the concrete and soil. For concrete, a site-specific decontamination method will be used and chip sampling will be conducted to verify whether decontamination was successful. For soils, sampling of the soil beneath the raised loading dock will be conducted. Results from chip and soil samples will be analyzed to ensure closure performance standards were met.

Ecology and the Permittees were unable to come to agreement on sampling requirements to verify clean closure standards are met. The Permittees originally proposed no sampling. Ecology added sampling requirements for the 271-T Cage based on the following:

- Six focused soil samples. Justification – Six focused soil samples were added based on Ecology’s professional judgement and Ecology’s walk down on November 11, 2018. Three sample locations are directly below the front edge of the 271-T Cage, and three soil samples are located near the middle of the 271-T Cage. The 271-T Cage DWMU lacks a berm to prevent waste releases from the DWMU to the soil. Water and rust stains are evident on the front of the concrete cage pad, which is an open and direct avenue to the soil below the front of the 271-T Cage. Since the 271-T Cage is an uncoated elevated pad, any runoff from the pad could potentially reach the soil below the center of the pad. Weekly waste management area inspection records identified that the 271-T Cage may have managed dangerous or mixed waste, and it is uncertain if dangerous or mixed waste residues are present.
- Five non-statistical grid concrete chip samples. Justification – Five non-statistical grid concrete chip samples were added based on Ecology’s professional judgement, as an evaluation criterion for determining effectiveness of the proposed site-specific decontamination method per Ecology Publication #94-111, Section 5.6.1, “*If high-pressure steam or water washing is used, the site-specific decontamination performance standard might involve comparing concrete chip samples with MTCA unrestricted site use cleanup levels.*” The use of non-statistical grid sampling was determined to be the least biased method for determining if the closure performance standards were achieved. The number of samples was based on the pads being uncoated and the uncertainty of whether the 271-T Cage was used to manage dangerous and mixed waste or if dangerous or mixed waste residues are present. The number of samples was also based on the current physical condition of the pad, the pad size of approximately 200 square feet, and for achieving equal

representation of the entire pad. A random start was chosen to eliminate bias associated with selecting sampling locations.

#### 4.1.4 Closure Actions for Closure Unit Group 30, 211-T Pad

Clean closure for the 211-T Pad requires closure performance standards be met for both the concrete and soil beneath the concrete. Concrete will be decontaminated using a site-specific decontamination method. Once decontaminated, chip sampling will be conducted to verify whether decontamination was successful. To verify underlying soils are clean, sampling beneath the concrete pad and sump will be conducted. Results from chip and soil samples will be analyzed to ensure closure performance standards were met.

Ecology and the Permittees were unable to come to agreement on sampling requirements to verify clean closure standards are met. The Permittees originally proposed one focused soil sample below the sump. Ecology added sampling requirements for the 211-T Pad based on the following:

- Twelve focused soil samples. Justification – Twelve focused soil samples were added based on Ecology’s professional judgement and Ecology’s walk down on November 11, 2018. Per Ecology Publication #94-111, Section 7.5.1, “*Sampling of soils under structures will be done through holes bored in the overlying structure, if possible. For example, samples of soil overlain by concrete should be collected through holes bored in the concrete,*” and Section 7.2.2, “*Focused sampling should be conducted in addition to grid sampling where there is evidence of leaks or spills or potential for a dangerous waste constituent to migrate.*” Focused soil samples locations were chosen based on the potential for contamination to migrate through the concrete to the soil below: 3 soil samples at the cold joints along the edge of the concrete, 8 soil samples at each guard post, and one soil sample below the blind sump. The guard posts and cold joints are considered possible avenues for waste to migrate to the soil below the concrete; therefore, these locations were identified for focused soil sampling. Any spill on the 211-T Pad would have drained and collected in the blind sump, therefore a focused soil sample is identified.
- One focused concrete chip sample. Justification – One focused concrete chip sample as added at the sump based on Ecology’s professional judgement and Ecology’s walk down on November 11, 2018. Per Ecology Publication #94-111, Section 7.2.2, “*Focused sampling should be conducted in addition to grid sampling where there is evidence of leaks or spills or potential for a dangerous waste constituent to migrate.*” Additionally, it is uncertain if dangerous or mixed waste residues are present. Ecology guidance Publication #94-111, Section 5.5 also states, “*Ecology may require sampling of material subject to decontamination to determine the nature and extent of contamination present in the material and/or to confirm the adequacy of any decontamination method. For example, chip sampling of concrete containment systems or rinsate sampling for tank decontamination may be required.*” The sump is the lowest point of the 211-T Pad and is considered to have the highest potential for contamination to migrate. The sump chip sample result will confirm whether decontamination was successful for the concrete within the sump.
- Six non-statistical grid concrete chip samples. Justification – Six non-statistical grid concrete chip samples were added based on Ecology’s professional judgement, as an evaluation criterion for determining effectiveness of the proposed site-specific decontamination method per Ecology Publication #94-111, Section 5.6.1, “*If high-pressure steam or water washing is used, the site-specific decontamination performance standard might involve comparing concrete chip samples with MTCA unrestricted site use cleanup levels.*” The use of non-statistical grid sampling was determined to be the least biased method for determining if the closure performance standards were achieved. The number of samples was based on the pad being uncoated and the lack of information on whether dangerous or mixed waste residues are present at this unit. The number of samples was also based on the current physical condition of the pad, the pad size of

approximately 1,180 square feet, a maximum waste storage volume of 83.9 m<sup>3</sup>, waste in storage from October 1985 through April 2006, and for achieving equal representation of the entire pad. A random start was chosen to eliminate bias associated with selecting sampling locations.

#### **4.1.5 Closure Actions for Closure Unit Group 37, 221-T Sand Filter Pad**

For the 221-T Sand Filter Pad, clean closure will be achieved through sampling of the soil. The samples will be analyzed to confirm whether closure performance standards have been achieved. Ecology and the Permittees are in agreement on sampling requirements to verify clean closure standards are met. The Permittees proposed 25 statistical grid soil samples.

#### **4.1.6 Closure Actions for Closure Unit Group 39, 2401-W Waste Storage Building**

For the 2401-W Waste Storage Building, clean closure will be achieved through treatment of the concrete surface using the physical extraction method of Scarification, Grinding, and Planing as described in 40 CFR 268.45, Table 1, to remove at least 0.6 cm of the concrete surface to a “clean debris surface.” “Clean debris surface” means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area (footnote at end of Table 1). Sampling of the soil beneath the concrete will also be conducted to ensure closure performance standards were achieved for the soil.

Ecology and the Permittees were unable to come to agreement on sampling requirements to verify clean closure standards are met for the soil. The Permittees originally proposed no sampling. Ecology added sampling requirements for the 2401-W Waste Storage Building based on the following:

- Six focused soil samples. Justification – Six focused soil samples were added based on Ecology’s professional judgement and Ecology’s walk down on November 11, 2018. The sampling locations were chosen where intersections of at least two expansion joints occurred. Per Ecology Publication #94-111, Section 7.2.2, “*Focused sampling should be conducted in addition to grid sampling where there is evidence of leaks or spills or potential for a dangerous waste constituent to migrate.*” The intersections where two construction joints/seams meet are considered possible avenues for waste to migrate to the soil below the concrete; therefore, these locations were identified for focused soil sampling.

#### **4.1.7 Closure Actions for Closure Unit Group 41, 221-T Railroad Cut**

For the 221-T Railroad Cut, clean closure will be achieved through sampling of the soil. The samples will be analyzed to confirm whether closure performance standards have been achieved. Ecology and the Permittees are in agreement on sampling requirements to verify clean closure standards are met. The Permittees proposed 24 statistical grid soil samples.

## **4.2 Basis for Closure Unit Group Permit Conditions**

The Unit Group Permit Conditions and Addenda H in Part V, Closure Unit Groups 27, 28, 29, 30, 37, 39, and 41 are intended to protect human health and the environment by ensuring the DWMUs are closed according to the approved Addendum H, Closure Plans. Ecology reviewed the closure plan submittals for these units, and has included permit conditions to ensure the Permittees comply with environmental performance standards, and modify the closure plans as needed during closure activities.

### **The following are permit conditions for Closure Unit Groups 28, 30, 37, and 41:**

Permit Condition V.4.A is a standard condition that appears as the first permit condition for each unit group. It refers to the Hanford Site-wide Permit Attachment 9, Permit Applicability Matrix, which

identifies which Part I and Part II Permit Conditions are applicable to DWMUs within Part III, V or VI unit groups. The permit condition also prevents conflicts between the unit group permit conditions, and the Part I and II Permit Conditions.

Permit Condition V.4.B.1 requires the Permittees to comply with all of the requirements set forth in the Addendum H, Closure Plan, and to close these units in accordance with the plan.

Permit Condition V.4.B.2 is intended to ensure that Ecology is notified within 24 hours of any deviations from the approved closure plan. This allows Ecology to review the deviation to ensure it does not affect the final acceptance of closure.

Permit Condition V.4.B.3 is intended to ensure sampling assumptions made in the Addendum H, Closure Plan are met. This condition will take one of two forms, depending on whether or not statistical grid sampling or non-statistical and/or focused sampling are used.

- Where statistical grid sampling is used, the Permittees must generate the Data Analysis Report in the Visual Sample Plan and submit it to Ecology within 30 days of the final receipt of laboratory analytical data from sampling. If the Data Analysis Report indicates that sampling assumptions are not met, the permit condition also requires the Permittees to submit a permit modification request to amend the closure plan within 60 days of completion of the submittal of the Visual Sample Plan Data Analysis Report to Ecology. The permit modification will include a revised sampling design and description of any additional closure work to be performed.
- Where only non-statistical grid sampling and/or focused sampling are used, the Permittees must compare the sampling analytical results directly to the closure performance standards specified in the sampling plan in Addendum H, Closure Plan to verify they have not been exceeded. If the closure performance standards have been exceeded, the Permittees will submit a permit modification request in accordance with Permit Condition I.C.3 to amend the Closure Plan to reflect the additional work and/or sampling that would need to be done to achieve clean closure. The permit modification request must be submitted within 60 days of completion of the review of sampling data results.

Permit Condition V.4.B.4 ensures the closure activities for the DWMU are completed per WAC 173-303-610(6). The Permittees provide a certification that the DWMU has been closed in accordance with the Addendum H, Closure Plan. This certification is signed by the Permittees and an Independent Qualified Registered Professional Engineer. Ecology has the regulatory right to request a copy of the certification document, report, or any other related material. This permit condition also requests that all the documentation (reports, etc.) be provided to Ecology at the same time as the certification.

**The following are permit conditions for Closure Unit Groups 27, 29 and 39:**

Permit Condition V.4.A is a standard condition that appears as the first permit condition for each unit group. It refers to the Hanford Site-wide Permit Attachment 9, Permit Applicability Matrix, which identifies which Part I and Part II Permit Conditions are applicable to DWMUs within Part III, V or VI unit groups. The permit condition also prevents conflicts between the unit group permit conditions, and the Part I and II Permit Conditions.

Permit Condition V.4.B.1 requires the Permittees to comply with all of the requirements set forth in the Addendum H, Closure Plan, and to close these units in accordance with the plan.

Permit Condition V.4.B.2 is intended to ensure that Ecology is notified within 24 hours of any deviations from the approved closure plan. This allows Ecology to review the deviation to ensure it does not affect the final acceptance of closure.

Permit Condition V.4.B.3 requires the Permittees to notify Ecology in advance of conducting the visual inspection that will take place following removal of stored equipment, in order for Ecology to witness the inspection.

Permit Condition V.4.B.4 is intended to ensure sampling assumptions made in the Addendum H, Closure Plan are met. This condition will take one of two forms, depending on whether or not statistical grid sampling or non-statistical and/or focused sampling are used.

- Where statistical grid sampling is used, the Permittees must generate the Data Analysis Report in the Visual Sample Plan and submit it to Ecology within 30 days of the final receipt of laboratory analytical data from sampling. If the Data Analysis Report indicates that sampling assumptions are not met, the permit condition also requires the Permittees to submit a permit modification request to amend the closure plan within 60 days of completion of the submittal of the Visual Sample Plan Data Analysis Report to Ecology. The permit modification will include a revised sampling design and description of any additional closure work to be performed.
- Where only non-statistical grid sampling and/or focused sampling are used, the Permittees must compare the sampling analytical results directly to the closure performance standards specified in the sampling plan in Addendum H, Closure Plan to verify they have not been exceeded. If the closure performance standards have been exceeded, the Permittees will submit a permit modification request in accordance with Permit Condition I.C.3 to amend the Closure Plan to reflect the additional work and/or sampling that would need to be done to achieve clean closure. The permit modification request must be submitted within 60 days of completion of the review of sampling data results.

Permit Condition V.4.B.5 ensures the closure activities for the DWMU are completed per [WAC 173-303-610 \(6\)](#). The Permittees provide a certification that the DWMU has been closed in accordance with the Addendum H, Closure Plan. This certification is signed by the Permittees and an Independent Qualified Registered Professional Engineer. Ecology has the regulatory right to request a copy of the certification document, report, or any other related material. This permit condition also requests that all the documentation (reports, etc.) be provided to Ecology at the same time as the certification.

## **5.0 Procedures for Reaching a Final Decision on the Draft Permit Modification**

The Washington State Dangerous Waste Regulations in WAC 173-303-830 describe the types of changes or modifications that may be made to a Dangerous Waste Permit issued by Ecology.

Part I, Part II, and Attachment 9 Permit Applicability Matrix will be modified after the public comment period when the permit modification becomes effective.

This draft permit modification was prepared according to the procedures in WAC 173-303-840(2). As required by WAC 173-303-840(3)(d), draft permits Ecology issues will have at least a 45-day public comment period. The public comment period for this draft permit begins on December 16, 2019 and ends on February 7, 2020.

Comments must be received by eComments no later than midnight on July 24, 2020. Electronic comment submittal is the preferred method for providing comments to Ecology. The following is the link to eComments:

<http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>

In the event it is not possible to provide electronic comments, written comments must be post-marked, received by e-mail, or hand-delivered no later than close of business (5:00 p.m. PST) July 24, 2020.

Direct all written comments to:

Daina McFadden  
Washington State Department of Ecology  
3100 Port of Benton Blvd.  
Richland, Washington 99354  
E-mail address: [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov)

In accordance with WAC 173-303-840(10)(c), when a permit is modified, only those conditions to be modified will be reopened when a new draft permit is prepared. In the case of this draft permit, only Part V, Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut are open for public comment. All other aspects of the existing Hanford Site-wide Permit remain in effect for the duration of the draft permit modification.

Ecology will consider and respond to all written comments on this draft permit modification submitted by the deadlines. Ecology will then issue a final permit decision, which will become effective 30 days after the issuance date. If the final permit decision includes substantial changes to the draft permit modification because of public comment, we will consider initiating a new public comment period.

A public hearing is not scheduled, but if there is enough interest Ecology will consider holding one. To request a hearing or for more information, contact:

Daina McFadden  
Washington State Department of Ecology  
509-372-7950  
E-mail address: [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov)

After completion of the 45-day public comment period, Ecology will issue the final Hanford Site-wide Permit with Part V, Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut to the permittees. NWP will also issue a Response to Comments document to the permittees and the public. The final permit decision may be appealed within 30 days after issuance of that decision. If there is no appeal, the permit will stand as issued.

At this time, **Ecology's offices are currently not open for in-person permit document reviews.** When in-person reviews become available again, Ecology will let you know. In the meantime, you can still view permit records on the Ecology website at [our public comment period page](#). To view documents at the other Hanford Public Information Repositories, including the USDOE Administrative Record at 2440 Stevens Drive, please contact those facilities for access to public comment period documents.

If you have difficulty accessing documents on the Ecology website or at the other Public Information Repositories, we will work with you to arrange a way to provide records to you electronically.

This approach is consistent with Washington State Department of Ecology offices across the state.

Copies of the Part V, draft permit modification Unit Specific Permit Conditions and Closure Plan files for: (1) Closure Unit Group 27, 277-T Building; (2) Closure Unit Group 28, 277-T Outdoor Storage Area; (3) Closure Unit Group 29, 271-T Cage; (4) Closure Unit Group 30, 211-T Pad; (5) Closure Unit Group 37, 221-T Sand Filter Pad; (6) Closure Unit Group 39, 2401-W Waste Storage Building; and (7) Closure Unit Group 41, 221-T Railroad Cut are available for review at the Hanford Public Information Repositories. For additional information, call the Hanford Cleanup Hotline toll-free at 800-321-2008 or email [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov).

United States Department of Ecology  
Nuclear Waste Program Resource Center  
3100 Port of Benton Boulevard  
Richland, Washington 99354  
Contact: Teresa Booth (509) 372-7950

United States Department of Energy  
Administrative Record  
2440 Stevens Drive  
Richland, Washington 99354  
Contact: Heather Childers (509) 376-2530

## **Hanford Public Information Repositories**

### **Richland**

Ecology Nuclear Waste Program Resource Center  
3100 Port of Benton Blvd. Richland, WA 99354  
509-372-7950

U.S. Department of Energy Administrative Record  
2440 Stevens Drive, Room 1101 Richland, WA  
99354  
509-376-2530

Washington State University Tri-Cities  
Department of Energy Reading Room  
2770 Crimson Way, Room 101L Richland, WA 99354  
509-375-7443

### **Portland**

Portland State University  
Branford Price Millar Library  
1875 Southwest Park Avenue  
Portland, Oregon 97207  
Contact: (503) 725-4542

### **Seattle**

University of Washington Suzzallo Library  
PO Box 352900  
Seattle, Washington 98195  
Contact: (206) 543-5597

### **Spokane**

Gonzaga University  
Foley Center  
502 East Boone Avenue  
Spokane, Washington 99258  
Contact: John Spencer (509) 313-6110

Information on the proposed permit modification is also available online at <http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>. If special accommodations are needed for public comment, contact Ecology's Nuclear Waste Program at 509-372-7950.

## **6.0 State Environmental Policy Act (SEPA)**

Appendix R of the Tank Closure & Waste Management Environmental Impact Statement (EIS) includes Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut in the cumulative impacts analysis for the Hanford Site. Based on that analysis, Ecology has done a Determination of Significance/Adoption Notice for the EIS.

The EIS analyzed impacts from the current USDOE-RL vision that calls for the clean closure of Closure Unit Group 27, 277-T Building; Closure Unit Group 28, 277-T Outdoor Storage Area; Closure Unit Group 29, 271-T Cage; Closure Unit Group 30, 211-T Pad; Closure Unit Group 37, 221-T Sand Filter Pad; Closure Unit Group 39, 2401-W Waste Storage Building; and Closure Unit Group 41, 221-T Railroad Cut.

Link to the Cumulative Impacts Analysis for the Hanford Site: [Link to Appendix R Cumulative Impacts: Assessment Methodology](#)