



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**STATEMENT OF BASIS**

**Proposed Permit Modification to Part III 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, Operating Unit Group 10, Waste Treatment and Immobilization Plant***

February 2020

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## STATEMENT OF BASIS

### **Proposed Permit Modification to Part III 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, Operating Unit Group 10, Waste Treatment and Immobilization Plant***

#### **PERMITTEES**

United States Department of Energy  
Office of River Protection  
(Owner/Operator)  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

The Washington State Department of Ecology (Ecology) developed this Statement of Basis 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 III 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 the following documents to Operating Unit Group 10, Waste Treatment and Immobilization Plant (WTP), Part III of the Hanford Site-wide Permit: the Pre-Demonstration Test Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant and the Risk Assessment Work Plan for the Direct Feed Low-Activity Waste (DFLAW) Configuration. The Proposed modification will also add revisions to documents already incorporated in the WTP Permit.

This Statement of Basis is divided into five sections:

- 1.0 Hanford Facility Dangerous Waste Permit (Site-Wide Permit) Background
- 2.0 WTP Permitting Process
- 3.0 WTP Operating Unit Group Description
- 4.0 Agency-initiated Permit Modification Process for the WTP Operating Unit Group
- 5.0 Procedures for Reaching a Final Decision on the Draft Permit Modification

#### **1.0 Hanford Facility Dangerous Waste Permit (Site-wide Permit) Background**

Ecology's Nuclear Waste Program (NWP) oversees management of 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 mixed waste at Hanford. Ecology does not regulate waste that is solely radioactive. The U.S. 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 many 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 mixed and dangerous waste Treatment, Storage, and Disposal (TSD) Units at Hanford. These TSDs 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 DWMU.

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.

## **2.0 WTP PERMITTING PROCESS**

We are using a phased (or stepped) approach to permit the WTP TSD Unit. The initiation of the phased permitting to support WTP was completed on September 25, 2002, with issuance of a final Dangerous Waste Permit allowing construction of the Low-Activity Waste (LAW) Facility, Pretreatment Facility (PTF), High-Level Waste Facility (HLW), Analytical Laboratory (LAB) Facility, and Balance of Facilities (BOF). The initial issuance of the WTP Permit supported the Baseline Configuration of the Facility. In the Baseline Configuration, the PTF and the HLW Facility will be used to support the treatment of high-level waste from the double-shell tanks. Tank waste will be sent directly from the Tank Farms to the PTF where it will be pretreated and sent to either the HLW Facility or the LAW Facility, depending on the waste characterization. In the future, the Permittees will provide Ecology with updated information in support of the Baseline Configuration. Ecology will review permit documents and design and provide them for public review and eventual incorporation into the WTP Permit. The current Consent Decree Milestone to start operations at PTF and HLW is 2033.

Since 2002 the Permittees have been submitting design documents and other information for Ecology approval as written in the Interim Compliance Schedules. The WTP Interim Compliance Schedules require that the Permittees provide Ecology additional detailed information and design documents to support construction and operations of regulated portions of the WTP Dangerous Waste Management Units.

In 2016 Ecology agreed through Consent Decree milestones to operate a portion of the WTP Facility under the Direct Feed Low-Activity Waste configuration, allowing operations of only the LAW, LAB, Effluent Management Facility (EMF), and BOF, while portions of the Baseline Configuration would remain in the construction phase.

To prepare for the DFLAW operations, Ecology has been actively incorporating permit documents and design into the WTP Permit. To reflect this new path forward, the WTP Permit includes language to reflect an operating and construction permit.

To support the anticipated startup of operations in the DFLAW Configuration the Permittees have been submitting documentation as required in the Interim Compliance Schedule for LAW, LAB, EMF, and BOF. These Interim Compliance Schedule Items require updating portions of the Dangerous Waste Permit Application to include operational language in permit conditions and chapters. With this permit modification, the Preliminary Risk Assessment and Risk Assessment Work Plan for DFLAW will be incorporated into the WTP Permit. This submittal from the permittees completes Interim Compliance Schedule Item EMF-9.

When all of the required permitting steps are completed, the WTP TSD Unit will comply with all the applicable requirements of [WAC 173-303](#). Then, after receiving written permission from Ecology, the Permittees can begin treatment and storage of dangerous and mixed waste at the WTP under both the DFLAW and Baseline Configurations.

### **3.0 WTP OPERATING UNIT GROUP DESCRIPTION**

The WTP includes multiple facilities: LAB, LAW Facility, HLW Facility, PTF, EMF, and BOF.

The WTP will be operated in two processing configurations. For near-term operations, WTP will be operated in the DFLAW configuration requiring the LAB, LAW, EMF, and BOF to become operational first to process the low-activity waste from tank farms.

In the DFLAW configuration, the waste is pretreated to remove cesium and solids before the waste is sent to the LAW facility. In this configuration, the pretreated waste will bypass the PTF and be fed directly from the tank farms to the LAW facility. The LAW facility is where the low-activity fraction of the waste will be solidified by vitrification.

The liquid effluents generated in the LAW facility and the LAB are transferred and treated at EMF, which will reduce the effluent volume by evaporation. WTP will later be operated in the Baseline Configuration when the PTF and the HLW Facility become operational.

### **4.0 AGENCY-INITIATED PERMIT MODIFICATION PROCESS FOR THE WTP OPERATING UNIT GROUP**

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

The draft documents for public review will support revisions to Appendix 6.2, “Risk Assessment Work Plan,” and Appendix 6.3, “Pre-Demonstration Test Risk Assessment Report,” as required by Interim Compliance Schedule Item number EMF-9, and WTP Unit specific permit conditions III.10.C.11.a and III.10.C.11.b. Specifically, the following documents are proposed to be incorporated into the permit:

- Pre-Demonstration Test Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant.
- Risk Assessment Work Plan for the Direct Feed Low-Activity Waste Configuration.

The following revised documents are proposed to be updated in the permit:

- Emissions Study for the Hanford Tank Waste Treatment and Immobilization Plant.
- Cell Emissions Estimate.
- Chemical Parameters and Toxicological Inputs for the Environmental Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant.
- Hanford Tank Waste Treatment and Immobilization Plant Risk Assessment Air Quality Modeling Protocol.

The Preliminary Risk Assessment will provide an estimate of human health and ecological receptor risk based on engineering estimates of emissions from WTP units. The Final Risk Assessment will be conducted following collection of data from performance demonstration testing of WTP units, where estimated emission rates will be supplemented with the actual emissions results of the demonstration tests. The receptor exposure timelines evaluated in the preliminary risk assessment report are consistent with the timelines presented on Figure 7-3 of the DFLAW risk assessment work plan (24590-WTP-RPT-ENV-18-003) and on Figure 7-7 of the baseline risk assessment work plan (24590-WTP-RPT-ENV-14-002).

The DOE and Ecology have long discussed how best to assess the cumulative impacts of contamination sources across the Central Plateau. It is Ecology’s expectation that a cumulative risk assessment be developed that combines the impacts or results from the operations of the DFLAW Configuration and the future operations of Baseline Configuration.

In 2015, Ecology provided the draft WTP Risk Assessment Work Plan and associated supplements for public review; however, the Direct Feed Low-Activity Waste configuration was not addressed in the document at that time. Since 2015, the WTP Permit has been modified to include the DFLAW configuration.

## **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.

This draft permit modification was prepared according to the procedures in WAC 173-303-830(4)(d). As required by WAC 173-303-830(4)(d), draft permits issued by Ecology will have at least a 45-day public comment period. The public comment period for this draft permit will be February 24 through April 9, 2020.

Comments must be post-marked, received by e-mail, or hand-delivered no later than close of business (5:00 p.m. PST) April 9, 2020.

Direct all comments to (electronic preferred):

Daina McFadden

Washington State Department of Ecology  
3100 Port of Benton Boulevard  
Richland, Washington 99354

<http://nw.ecology.commentinput.com/?id=F6msi>

Ecology will consider and respond to all written comments on this draft permit modification that are submitted by the April 9, 2020 deadline. At the completion of the 45-day public comment period Ecology will make a final permitting decision. If the final decision is to issue the permit, Ecology will issue a final permit for Part III of the Hanford Site-wide Permit, Operating Unit Group 10, Waste Treatment and Immobilization Plant. If the final decision includes substantial changes to the draft permit modification because of public comment, Ecology 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)

Ecology will also issue a Response to Comments document to the Permittees and the public upon issuance of the final permit. The final permit modification may be appealed within 30 days after issuance. If there is no appeal, the permit will be effective 30 days following issuance.

Copies of the following documents for Part III, Operating Unit Group 10, WTP are available for review at the Hanford Public Information Repositories locations listed below.

For additional information call (509) 372-7950 or e-mail [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov).

## **Hanford Public Information Repositories and Administrative Records**

### **Richland, Washington**

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

### **Other Locations:**

#### **Portland**

Portland State University  
Branford Price Millar Library  
1875 Southwest Park Avenue  
Portland, Oregon 97201  
(503) 725-4542

#### **Spokane**

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

#### **Seattle**

University of Washington Suzzallo Library  
P.O. Box 352900  
4000 15<sup>th</sup> Avenue Northeast  
Seattle, Washington 98195  
(206) 543-5597

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.