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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY  
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TTY 711 or 800-833-6388 (For the Speech or Hearing Impaired)

August 16, 2005

Mr. Roy J. Schepens, Manager  
Office of River Protection  
United States Department of Energy  
P.O. Box 450, MSIN: H6-60  
Richland, Washington 99352

RECEIVED  
AUG 20 2005

Mr. Edward S. Aromi, Jr.  
President and General Manager  
CH2M Hill Hanford Group, Inc.  
P.O. Box 1500, MSIN: H6-08  
Richland, Washington 99352

EDMC

Dear Mr. Schepens and Mr. Aromi:

Re: Request for a Temporary Authorization to Continue Construction at the Integrated Disposal Facility

Reference: Letter 05-TPD-075, dated August 10, 2005, from R. Schepens to M.A. Wilson, "Modification of the Hanford Site Wide Permit to Provide Temporary Authorization (TA) for Construction of the Liner System and the Leachate Collection and Transport Facilities at the Integrated Disposal Facility (IDF)"

I am issuing this Temporary Authorization (TA) to allow construction of the Liner System and Leachate Collection and Transport Facilities in Cell 1 (Mixed-Waste Cell) of the Integrated Disposal Facility (IDF). The IDF is a landfill in which the U.S. Department of Energy (USDOE) proposes to dispose of low-level radioactive waste and mixed low-level waste in the form of immobilized low-activity waste from the Demonstration Bulk Vitrification System and the Waste Treatment Plant. These systems are described in Section 4.3 of the Permit Application, DOE/RL-2003-12, Rev. 1, and dated 02/2005. This authorization includes construction of all liners immediately above the admix liner up through and including the initial operations layer and construction of the Leachate Collection and Transport Facilities. This TA does not allow operation of the facility until an approved permit has been issued.

Washington State Department of Ecology staff reviewed your request for a TA and agree that it meets the requirements in Washington Administrative Code (WAC) 173-303-830(4)(e)(iii)(B)(I).



Mr. Schepens and Mr. Aromi

August 16, 2005

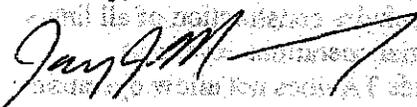
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You and your contractors must comply with the following conditions:

- You must construct the IDF in accordance with all specifications contained in RPP-1849, Rev. 0, IDF Technical Specifications.
- You must construct the facility in accordance with the Design Report as found in Chapter 4 and Appendix 4A of the agreed to modifications of the Draft Permit for Operating Unit 11, Integrated Disposal Facility, Hanford Site Wide Permit (Draft IDF Permit).
- You must comply with the construction quality assurance requirements found in WAC 173-303-335 as they apply to landfill construction and the requirements found in Appendix 4B of the agreed to modifications of the Draft IDF Permit.
- You must comply with all design requirements found in the agreed to modifications of the Draft Permit Condition III.11.C (see attachment) as they pertain to the construction of the leachate collection system.
- You must comply with all construction requirements found in the agreed to modifications of the Draft Permit Condition III.11.D (See Attachment) and all other conditions of the modified Draft Permit as they apply to the installation of the Liner System and the Leachate Collection and Transport System.
- You must comply with all requirements found in the agreed to modifications of the Draft Permit Condition III.11.G (see enclosure) as they apply to the management of construction waste water.
- You must continue to implement the Mitigation Action Plan that you provided Ecology to replace shrub steppe habitat lost when you excavated the IDF and to protect species that are included in the Migratory Bird Treaty Act.

If you have any questions concerning this TA approval, please contact Suzanne Dahl at (509) 372-7892.

Sincerely,



Jay J. Manning  
Director

Enclosure

cc: See next page

Mr. Schepens and Mr. Aromi

August 16, 2005

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cc w/enclosure:

Nick Ceto, EPA

Joel Hebdon, USDOE

Zack Smith, USDOE

Moses Jaraysi, CH2M

Ro Vinson, PAC

Stuart Harris, CTUIR

Gabriel Bohnee, NPT

Russell Jim, YN

Todd Martin, HAB

Ken Niles, ODOE

Administrative Record: IDF Permit

CH2M Correspondence Control

Environmental Portal

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**PART III UNIT-SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS****OPERATING UNIT 11****Integrated Disposal Facility**

This document sets forth the operating conditions for the Integrated Disposal Facility (IDF).

**III.11.A COMPLIANCE WITH APPROVED PERMIT APPLICATION**

The Permittees shall comply with all requirements set forth in the Integrated Disposal Facility (IDF) Permit conditions, the Appendices specified in condition III.11.A., and the Amendments specified in Condition III.11.B through III.11.I. All subsections, figures, and tables included in these portions are enforceable unless stated otherwise:

**OPERATING UNIT 11:**

Part A, Dangerous Waste Permit, Revision 3, dated 3/2005

Chapter 2.0 Topographic Map Description

Chapter 3.0 Waste Analysis Plan

Chapter 4.0 Process Information

Chapter 5.0 Ground Water Monitoring

Chapter 6.0 Procedure to Prevent Hazards

Chapter 7.0 Contingency Plan

Chapter 8.0 Personnel Training

Chapter 11.0 Closure and Post Closure Requirements

Chapter 13.0 Other Federal and State Laws

Appendix 4A Design Report (as applicable to critical systems)

Appendix 4B Construction Quality Assurance Plan

Appendix 4C Response Action Plan

Appendix 4D Technical specifications document (RPP-18-489 Rev.0)

Appendix 7A Building Emergency Plan (As applicable in Chapter 7)

Appendix 8A Training Plan

General and Standard Hanford Facility RCRA Permit, WA7890008967 (Permit) conditions (Part I and Part II conditions) applicable to the IDF are identified in Permit Attachment 3 (Permit Applicability Matrix).

**III.11.B**      **AMENDMENTS TO THE APPROVED PERMIT APPLICATION**

III.11.B.1      Portions of Permit Attachment 4, Hanford Emergency Management Plan that are not made enforceable by inclusion in the applicability matrix for that document, are not made enforceable by reference in this document.

III.11.B.2      Permittees must comply with all applicable portions of the Permit. The facility and unit-specific recordkeeping requirements are distinguished in the General Information Portion of the Permit, and are tied to the Permit conditions.

III.11.B.3      The scope of this Permit is restricted to the landfill construction and operation as necessary to dispose of: 1) immobilized low activity waste from the WTP, and 2) the Demonstration Bulk Vitrification System and IDF operational waste as identified in Chapter 4.0. Future expansion of the RCRA trench, or disposal of other wastes not specified in this Permit, is prohibited unless authorized via modification of this Permit.

III.11.B.4      In accordance with WAC 173-303-806(11)(d), this Permit shall be reviewed every five (5) years after the effective date and modified, as necessary, in accordance with WAC 173-303-830(3).

**III.11.C**      **DESIGN REQUIREMENTS**

III.11.C.1      IDF is designed in accordance with WAC 173-303-665 and WAC 173-303-640 as described in Chapter 4.0. Design changes impacting IDF critical systems shall be performed in accordance with Conditions III.11.D.1.d.i and III.11.D.1.d.ii.

IDF Critical Systems<sup>1</sup> include the following: The leachate collection and removal system (LCRS), leachate collection tank (LCT), leak detection system (LDS), liner system (LS), and closure cap. H-2 Drawings for the LCRS, LCT, LDS, and LS are identified in Appendix 4A, Section 3 of this Permit. Drawings for the closure cap will be provided pursuant to Condition III.11.C.1.b.

III.11.C.1.a      The Permittees shall construct and operate the IDF in accordance with all specifications contained in RPP-18489 Rev 0. Critical systems, as defined in the definitions section of the Site-Wide RCRA Permit, are identified in Appendix 4A, Section 1 of this Permit.

**III.11.C.1.b**      **Landfill Cap**

At final closure of the landfill, the Permittees shall cover the landfill with a final cover (closure cap) designed and constructed [WAC 173-303-665(6), WAC 173-303-806(4)(h)] to: Provide long-term minimization of migration of liquids through the closed landfill; Function with minimum maintenance; Promote drainage and minimize erosion or abrasion of the cover; Accommodate settling and subsidence so that the cover's integrity is maintained; and have a permeability less than or equal to the permeability of any bottom liner system or natural sub soils present.

**III.11.C.1.c**      **Compliance Schedule**

Proposed CONCEPTUAL final cover design is presented in Chapter 11 (Closure and Financial Assurance). Six months prior to start of construction of IDF landfill final cover (but no later than 6 months prior to acceptance of the last shipment of waste at the IDF), the Permittees shall submit IDF landfill final cover design, specifications and CQA plan to Ecology for review and approval. No construction of the final cover may proceed until Ecology approval of the final design is given, through a permit modification.

- 1 III.11.C.1.d The Permittees shall notify Ecology at least sixty (60) calendar days prior to the date it  
2 expects to begin closure of the IDF landfill in accordance with WAC 173-303-610(c).
- 3 III.11.C.2 Design Reports
- 4 III.11.C.2.a New Tank Design Assessment Report
- 5 Permittees shall generate a written report in accordance with WAC 173-303-640(3)(a),  
6 providing the results of the leachate collection tank system design assessment. The report  
7 shall be reviewed and certified by an Independent Qualified Registered Professional  
8 Engineer (IQRPE)<sup>2</sup> in accordance with WAC-173-303-810(13)(a).
- 9 [2] "Independent qualified registered professional engineer," as used here and elsewhere  
10 with respect to Operating Unit 11, means a person who is licensed by the state of  
11 Washington, or a state which has reciprocity with the state of Washington as defined in  
12 RCW 18.43.100, and who is not an employee of the owner or operator of the facility for  
13 which construction or modification certification is required. A qualified professional  
14 engineer is an engineer with expertise in the specific area for which a certification is  
15 given.
- 16 III.11.C.2.b Compliance Schedule
- 17 Permittees shall submit the leachate collection tank design assessment report to Ecology  
18 along with the IQRPE certification, prior to construction of any part of the tank system  
19 including ancillary equipment.
- 20 **III.11.D CONSTRUCTION REQUIREMENTS**
- 21 III.11.D.1 Construction Quality Assurance
- 22 III.11.D.1.a Ecology shall provide field oversight during construction of critical systems. In cases  
23 where an Engineering Change Notices (ECN) and/or Non Conformance Report (NCR) is  
24 required, Ecology and the Permittees shall follow steps for processing changes to the  
25 approved design per Conditions III.11.D.1.d.i and III.11.D.1.d.ii.
- 26 III.11.D.1.b Permittees shall implement the Construction Quality Assurance Plan (CQA plan)  
27 (Appendix 4B of the permit) during construction of IDF.
- 28 III.11.D.1.b.i The Permittees will not receive waste in the IDF until the owner or operator has  
29 submitted to Ecology by certified mail or hand delivery a certification signed by the CQA  
30 officer that the approved CQA plan has been successfully carried out and that the unit  
31 meets the requirements of WAC173-303-665 (2)(h) or (j); and the procedure in WAC  
32 173-303-810 (14)(a) has been completed. Documentation supporting the CQA officer's  
33 certification shall be furnished to Ecology upon request.
- 34 III.11.D.1.c Construction inspection reports
- 35 III.11.D.1.c.i Permittees shall submit a report documenting the results of the leachate tank installation  
36 inspection. This report must be prepared by an independent, qualified installation  
37 inspector or a professional independent, qualified, registered, professional engineer either  
38 of whom is trained and experienced in the proper installation of tank systems or  
39 components. The Permittees will remedy all discrepancies before the tank system is  
40 placed in use. This report shall be submitted to Ecology 90 days prior to IDF operation  
41 and be included in the IDF Operating Record. [WAC-173-303-640(3)(h)].
- 42 III.11.D.1.d ECN/NCR Process for Critical Systems
- 43 Portions of the following conditions for processing engineering change notices and  
44 non-conformance reporting were extracted from and supersede Site Wide General Permit  
45 Condition ILL.

- 1 III.11.D.1.d.i Engineering Change Notice for Critical Systems  
 2 During construction of the IDF, the Permittees shall formally document changes to the  
 3 approved designs, plans, and specifications, identified in Appendices 4A, 4B, 4C, and 4D  
 4 of this permit, with an Engineering Change Notice (ECN). The Permittees shall maintain  
 5 all ECNs in the IDF unit-specific Operating Record and shall make them available to  
 6 Ecology upon request or during the course of an inspection. The Permittees shall provide  
 7 to Ecology copies of proposed ECNs affecting any critical system within five (5) working  
 8 days of initiating the ECN. Identification of critical systems is included in Condition  
 9 III.11.C.1 and Appendix 4A of this permit. Within five (5) working days, Ecology will  
 10 review a proposed ECN modifying a critical system and inform the Permittees whether  
 11 the proposed ECN, when issued, will require a Class 1, 2, or 3 Permit modification.
- 12 III.11.D.1.d.ii Non-conformance Reporting for Critical Systems
- 13 III.11.D.1.d.ii.a During construction of the IDF, the Permittees shall formally document with a  
 14 Nonconformance Report (NCR), any work completed which does not meet or exceed the  
 15 standards of the approved design, plans and specifications, identified in Appendices 4A,  
 16 4B, 4C and 4D of this permit. The Permittees shall maintain all NCRs in the IDF unit-  
 17 specific Operating Record and shall make them available to Ecology upon request, or  
 18 during the course of an inspection
- 19 III.11.D.1.d.ii.b The Permittees shall provide copies of NCRs affecting any critical or regulated system to  
 20 Ecology within five (5) working days after identification of the nonconformance..  
 21 Identification of critical systems is included in Condition III.11.C.1 and Appendix 4A of  
 22 this permit. Ecology will review a NCR affecting a critical system and notify the  
 23 Permittees within five (5) working days, in writing, whether a Permit modification is  
 24 required for any nonconformance, and whether prior approval is required from Ecology  
 25 before work proceeds, which affects the nonconforming item..
- 26 III.11.D.1.d.iii As-Built Drawings
- 27 Upon completing construction of IDF, the Permittees shall produce as-built drawings of  
 28 the project, which incorporate the design and construction modifications resulting from  
 29 all project ECNs and NCRs, as well as modifications made pursuant to WAC 173-303-  
 30 830. The Permittees shall place the drawings into the Operating Record within twelve  
 31 (12) months of completing construction.
- 32
- 33 III.11.D.2 The Permittees shall not reduce the minimum frequency of destructive testing less  
 34 than one test per 500 feet of seam, without prior approval in writing from Ecology
- 35 **III.11.E GROUND WATER AND GROUND WATER MONITORING**
- 36 Ground water shall be monitored in accordance with WAC 173-303 and the provisions  
 37 contained in the Ecology-approved facility ground water monitoring plan (Chapter 5.0).  
 38 All wells used to monitor the ground water beneath the unit shall be constructed in  
 39 accordance with the provisions of WAC-173-160.
- 40 III.11.E.1 Ground Water Monitoring Program
- 41 III.11.E.1.a Prior to initial waste placement in the IDF landfill, the Permittees shall sample all ground  
 42 water monitoring wells in the IDF network twice quarterly for one first year to determine  
 43 baseline conditions. For the first sampling event (and only the first), samples for each  
 44 well will include all constituents in 40 CFR-264 Appendix IX. Thereafter, sampling will  
 45 include only those constituents as specified in Chapter 5.0, Table 5-2: chromium (filtered  
 46 and unfiltered the first year to compare results), specific conductance, TOC, TOX, and

- 1 pH. Other constituents to be monitored but not statistically compared include alkalinity,  
2 anions, ICP metals, and turbidity. These will provide important information on  
3 hydrogeologic characteristics of the aquifer and may provide indications of encroaching  
4 contaminants from other facilities not associated with IDF.
- 5 III.11.E.1.b After the baseline monitoring is completed, and data is analyzed, the Permittees and  
6 Ecology shall assess revisions to Chapter 5.0, Table 5-2. Subsequent samples will be  
7 collected semi-annually and will include constituents listed in Table 5-2 as approved by  
8 Ecology. All data analysis will employ Ecology approved statistical methods pursuant to  
9 WAC 173-303-645. Changes to chapter 5.0 will be subject to the permit modifications  
10 procedures under WAC 173-303-830.
- 11 III.11.E.1.c All constituents used as tracers to assess performance of the facility through computer  
12 modeling should be sampled at least annually to validate modeling results. Groundwater  
13 monitoring data and analytes to be monitored will be reviewed periodically as defined in  
14 chapter 5.0 of this permit..
- 15 III.11.E.1.d Upon Ecology approval of the leachate monitoring plan, leachate monitoring and  
16 groundwater monitoring activities should be coordinated as approved by Ecology to form  
17 an effective and efficient means of monitoring the performance of the IDF facility.
- 18 III.11.E.1.e Ground water monitoring data shall be reported to Ecology on an annual basis beginning  
19 on March 1 after the issue date of this permit and annually on March 1 after that.
- 20 **III.11.F LEACHATE COLLECTION COMPONENT MANAGEMENT**
- 21 Permittees shall design, construct, and operate all leachate collection systems to minimize  
22 clogging during the active life and post closure period
- 23 III.11.F.1 Leachate Collection and Removal System (LCRS)
- 24 III.11.F.1.a At least 120 days prior to initial waste placement in the IDF, the Permittees shall submit a  
25 Leachate monitoring plan to Ecology for review, approval, and incorporation into the  
26 permit. Upon approval by Ecology, this plan will be incorporated into the Permit as a  
27 class 1' modification. The Permittees shall not accept waste into the IDF until the  
28 requirements of the leachate monitoring plan have been incorporated into this permit.
- 29 III.11.F.1.b Leachate in the LCRS (primary sump) shall be sampled and analyzed monthly for the  
30 first year of operation of the facility and quarterly thereafter (pursuant to WAC 173-303-  
31 200). Additionally, leachate shall be sampled and analyzed to meet waste acceptance  
32 criteria at the receiving treatment storage and disposal facility.
- 33 III.11.F.1.c Permittees shall manage the leachate in the LCRS system in a manner that does not allow  
34 the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS sump HDPE  
35 bottom liner except for rare storm events as discussed in Chapter 4.0, Section 4.3.6.1 and  
36 the LCRS sump trough [(WAC 173-303-665(2)(h)(ii)(B). Liquid with a depth greater  
37 than 30.5 cm above the SLDS liner will be removed at the earliest practicable time after  
38 detection (not to exceed 5 working days).
- 39 III.11.F.1.d After initial waste placement, Permittees shall manage all leachate from the permitted  
40 cell as dangerous waste (designated with Dangerous Waste Number F039) in accordance  
41 with WAC 173- 303.
- 42 III.11.F.2 Monitoring and Management of Leak Detection System (LDS/ secondary sump).
- 43 III.11.F.2.a Permittees shall manage the leachate in the LDS system in a manner that does not allow  
44 the fluid head to exceed 30.5 cm above the LDS liner (WAC 173-303-665(2)(h)(ii)(B).
- 45 III.11.F.2.b Permittees shall monitor and record leachate removal for comparison to the Action  
46 Leakage Rate (ALR) as described in Appendix 4C, Response Action Plan. If the leachate

- 1 flow rate in the LDS exceeds the ALR, the Permittees shall implement the Ecology  
2 approved response action plan (Appendix 4C).
- 3 III.11.F.2.c Leachate from the LDS (secondary sump) shall be sampled semi-annually if a pumpable  
4 quantity of leachate is available for sampling.
- 5 III.11.F.2.d Accumulated liquid of pumpable quantities in the LDS will be managed in a manner that  
6 does not allow the fluid head to exceed 30.5 cm above the LDS liner  
7 [WAC 173-303-665(2)(h)(i)(C)(iii)]. Liquid with a depth greater than 30.5 cm above the  
8 LDS liner will be removed at the earliest practicable time after detection (not to exceed  
9 5 working days).
- 10 III.11.F.2.e Permittees shall manage all leachate from the permitted cell as F039 dangerous waste in  
11 accordance with WAC 173-303.
- 12 III.11.F.3 Monitoring and Management of the Secondary Leak Detection System (SLDS)
- 13 III.11.F.3.a The Permittees shall submit to Ecology for approval a sub-surface liquids monitoring and  
14 operations plan (SLMOP) for the SLDS to include the following: monitoring frequency,  
15 pressure transducer configuration, liquid collection and storage processes, sampling and  
16 analysis and response actions. The SLMOP shall be approved by Ecology prior to  
17 placement of waste in the IDF, and incorporated into the Permit as a Class 1  
18 modification.
- 19 III.11.F.3.b Permittees shall monitor and manage the SLDS (tertiary sump) pursuant to the approved  
20 sub-surface liquids monitoring and operations plan.
- 21 III.11.F.3.c Accumulated liquid of pumpable quantities in the SLDS will be managed in a manner  
22 that does not allow the fluid head to exceed 30.5 cm above the SLDS liner  
23 [WAC 173-303-665(2)(h)(i)(C)(iii)]. Liquid with a depth greater than 30.5 cm above the  
24 SLDS liner will be removed at the earliest practicable time after detection (not to exceed  
25 5 working days).
- 26 III.11.F.3.d Permittees shall manage all leachate from the permitted cell as dangerous waste in  
27 accordance with WAC 173-303.
- 28 **III.11.G CONSTRUCTION WATER MANAGEMENT**
- 29 III.11.G.1 During construction, it is anticipated that liquids will accumulate on top of all liners and  
30 sumps. Permittees shall manage the construction wastewater in accordance with State  
31 Waste Discharge Permit ST 4511.
- 32 III.11.G.2 Liquid accumulation within the LCRS, LDS, and SLDS prior to initial waste placement  
33 will be considered construction wastewater (i.e., not leachate).
- 34 **III.11.H LANDFILL LINER INTEGRITY MANAGEMENT AND LANDFILL**  
35 **OPERATIONS**
- 36 III.11.H.1 Permittees shall design, construct, and operate the landfill in a manner to protect the  
37 liners from becoming damaged. Temperature: Waste packages with elevated  
38 temperatures shall be evaluated and managed in a manner to maintain the primary (upper)  
39 liner below the design basis temperature for the liner (e.g., 160F). Weight: Waste, fill  
40 material and closure cover shall be placed in a manner that does not exceed the allowable  
41 load bearing capacity of the liner (weight per area 13,000 lb/ft<sup>2</sup>). Puncture: At least 3  
42 feet of clean backfill material shall be placed as an operations layer over the leachate  
43 collection and removal system to protect the system from puncture damage.
- 44 III.11.H.1.a All equipment used for construction and operations inside of the IDF shall meet the  
45 weight limitation as specified in condition III.H.1. Only equipment that can be  
46 adequately supported by the operations layer as specified in condition III.H.1 (e.g., will

not have the potential to puncture the liner) shall be used inside of the IDF. All equipment used for construction and operations outside of the IDF shall not damage the berms. Changes to any equipment will follow the process established by condition II.R of the site wide permit. Within 120 days from the effective date of the permit a process for demonstrating compliance with this condition shall be submitted for review by Ecology. This process will be incorporated into appropriate IDF operating procedures prior to IDF operations.

III.11.H.2 The Permittees shall construct berms and ditches to prevent run-on and run-off in accordance with the requirements of Section 4.3.8 of this permit. Before the first placement of waste in the IDF, the Permittees shall submit to Ecology a final grading and topographical map on a scale sufficient to identify berms and ditches used to control run-on and run-off. Upon approval, Ecology will incorporate these maps into the permit as a class 1' modification.

III.11.H.3 The Permittees shall operate the RCRA IDF Cell (Cell1) in accordance with WAC 173-303-665(2) and the operating practices described in Chapters 3, 4, 6, 7, 8 and Appendix 4A, Section 1, subsection 7, except as otherwise specified in this Permit.

III.11.H.4 The Permittees shall maintain a permanent and accurate record of the three-dimensional location of each waste type, based on grid coordinates, within the RCRA IDF Cell (Cell1) in accordance with WAC 173-303-665(5).

III.11.H.5 The Permittees shall inspect the landfill in accordance with WAC 173-303-665(4)(b) and Chapter 6 of this permit, except as otherwise specified in this Permit.

### III.11.I WASTE ACCEPTANCE CRITERIA

The only acceptable waste form approved for disposal at the RCRA cell of IDF are IDF operational waste, Immobilized Low Activity Waste (ILAW) in glass form from the Waste Treatment Plant (WTP) Low Activity Waste (LAW) Vitrification facility and ILAW from the Bulk Vitrification Research Demonstration and Development facility (up to 50 boxes). Specifics about waste acceptance criteria for each of these wastes are detailed below.

No other waste forms may be disposed at the RCRA cell of IDF unless authorized via a Permit modification request. Requests for Permit modifications must be accompanied by an analysis adequate for Ecology to comply with SEPA, as well as by a risk assessment and groundwater modeling to show the environmental impact. Permit Condition III.11.I.6 outlines the process by which waste sources in the IDF are modeled in an ongoing risk budget and a ground water impact analysis.

III.11.I.1 Six months prior to IDF operations Permittees shall submit to Ecology for review, approval, and incorporation into the permit, all waste acceptance criteria (WAC) to address, at a minimum, the following: physical/chemical criteria, liquids and liquid containing waste, land disposal restriction treatment standards and prohibitions, compatibility of waste with liner, gas generation, packaging, handling of packages, minimization of subsidence.

III.11.I.1.a All containers/packages shall meet void space requirements pursuant to WAC 173-303-665(12).

III.11.I.1.b Compliance Schedule

III.11.I.1.b.i Six months prior to IDF operations, the Permittees shall submit to Ecology for review, approval, and incorporation into the permit any necessary modifications to the IDF WAP (Appendix 3A of the permit application, DOE/RL-2003-12, Rev 1).

## 1 III.11.I.2 ILAW Waste Acceptance Criteria

2 The only ILAW forms acceptable for disposal at IDF are: (1) approved glass canisters  
3 that are produced in accordance with the terms, conditions, and requirements of the WTP  
4 portion of the Permit, and (2) the 50 bulk vitrification test boxes as specified in the  
5 DBVS test plans.

6 To assure protection of human health and the environment, it is necessary that the  
7 appropriate quality of glass be disposed at IDF. The LDR Treatment Standard for eight  
8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver), when  
9 associated with High Level Waste is HLWIT (40 CFR 268). Because these metals are  
10 constituents in the Hanford Tanks Waste, the LDR standard for ILAW disposed to IDF is  
11 HLWIT.

12 For any ILAW glass form(s) that DOE intends to dispose of in IDF, DOE will provide to  
13 Ecology for review, an ILAW Waste Form Technical Requirements Document  
14 (IWTRD). The IWTRD will contain:

## 15 III.11.I.2.a WTP ILAW Waste Acceptance Criteria

16 III.11.I.2.a.i A description of each specific glass formulation that DOE intends to use including a basis  
17 for why each specific formulation is proposed for use, which specific tank wastes the  
18 glass formulation is proposed for use with, the characteristics of the glass that are key to  
19 satisfactory performance (e.g., VHT, PCT, and TCLP and/or other approved performance  
20 testing methodologies that the parties agree are appropriate and necessary), the range in  
21 key characteristics anticipated if the specific glass formulation is produced on a  
22 production basis with tank waste, and the factors that DOE must protect against in  
23 producing the glass to ensure the intended glass characteristics will exist in the actual  
24 ILAW.

25 III.11.I.2.a.ii A performance assessment that provides a reasonable basis for assurance that each glass  
26 formulation will, once disposed of in IDF in combination with the other waste volumes  
27 and waste forms planned for disposal at the entire Integrated Disposal Facility, be  
28 adequately protective of human health and the environment; and will not violate or be  
29 projected to violate all applicable state and federal laws, regulations and environmental  
30 standards.

31 Within 30 days of a request by Ecology, the Permittees shall provide a separate model  
32 run using Ecology's assumptions and model input.

33 III.11.I.2.a.iii A description of production processes including management controls and quality  
34 assurance/quality control requirements that assure that glass produced for each  
35 formulation will perform in a reasonably similar manner to the waste form assumed in the  
36 performance assessment for that formulation.

37 III.11.I.2.a.iv The Permittees shall update the IWTRD consistent with the above requirements for  
38 review by Ecology consistent with their respective roles and authority as provided under  
39 the TPA. Ecology comments shall be dispositioned through the Review Comment  
40 Record (RCR) process and will be reflected in further modeling to modify the IDF ILAW  
41 waste acceptance as appropriate. The initial IWTRD shall be submitted no later than  
42 January 2007, or if later than this date, as agreed to by Ecology. At a minimum, the  
43 Permittees shall submit updates to the IWTRD to Ecology every five years or more  
44 frequently if either of the following conditions exist:

- 45 • The Permittees submits a permit modification request allowing additional
- 46 waste forms to be disposed of at IDF,
- 47 • The WTP of other vitrification facility change their glass formulations from
- 48 those previously included in the ITRWD.

- 1 III.11.I.2.a.v The Permittees shall not dispose of any WTP ILAW not described and evaluated in the  
2 IWTRD.
- 3 III.11.I.3 ILAW Waste Acceptance Criteria Verification
- 4 III.11.I.3.a Six months prior to disposing of ILAW in the IDF, the Permittees will submit an ILAW  
5 verification plan to Ecology for review and approval. This plan will be coordinated with  
6 WTP, Ecology, and the Permittees personnel. This plan will outline the specifics of  
7 verifying ILAW waste acceptance through WTP operating parameters, and/or glass  
8 sampling. The Plan will include physical sampling requirements for batches, glass  
9 formulations, and/or feed envelopes.
- 10 III.11.I.4 Demonstration Bulk Vitrification System (DBVS) Bulk Vitrification Waste Acceptance  
11 Criteria
- 12 III.11.I.4.a Bulk Vitrification waste forms that are acceptable to be disposed of at IDF are up to  
13 50 boxes of vitrified glass produced pursuant to the DBVS RD&D Permit from  
14 processing Hanford Tank S-109 tank waste.
- 15 III.11.I.4.b If Bulk Vitrification is selected as a technology to supplement the Waste Treatment Plant,  
16 the IDF portion of the Permit will need to be modified to accept Bulk Vitrification Full  
17 Scale production waste forms. This modification will need to be accompanied by  
18 appropriate TPA changes (per M-062 requirements) and adequate risk assessment  
19 information sufficient for the Department of Ecology to meet its SEPA obligations.
- 20 III.11.I.4.c DBVS Waste Acceptance Verification will occur on 100% of the waste packages.  
21 Pursuant to the DBVS RD&D Permit, a detailed campaign test report will be produced  
22 and submitted to Ecology detailing results of all testing performed on each waste  
23 package that is produced. IDF personnel shall review these reports to verify that the  
24 waste packages meet IDF Waste Acceptance Criteria.
- 25 III.11.I.4.d The Permittees shall not dispose of any waste forms that do not comply with all  
26 appropriate and applicable treatment standards, including all applicable Land Disposal  
27 Restrictions (LDR).
- 28 III.11.I.5 Modeling – Risk Budget Tool
- 29 III.11.I.5.a The Permittees must create and maintain a modeling - risk budget tool, which models the  
30 future impacts of the planned IDF waste forms (including input from analysis performed  
31 as specified in conditions III.11.I.2.a through III.11.I.2.a.ii above) and their impact to  
32 underlying vadose and ground water. This model will be updated at least every 5 years  
33 beginning no more than one year after the issuance date of this permit and results  
34 provided to Ecology for review. The model will be updated more frequently if needed, to  
35 support permit modifications whenever a new waste stream is being proposed for  
36 disposal in the IDF. This modeling-risk budget tool shall be conducted in manner that  
37 represents a cumulative risk analysis of all waste previously disposed of in the entire IDF  
38 (both cell 1 and cell 2) and those waste excepted to be disposed of in the future for the  
39 entire IDF. The groundwater impact should be modeled in a concentration basis and  
40 should be compared against various performance standards including but not limited to  
41 drinking water standards (40 CFR 141 and 40 CFR 143). Ecology will review modeling  
42 assumptions, input parameters, and results and will provide comments to the Permittees.  
43 Ecology comments shall be dispositioned through the Review Comment Record (RCR)  
44 process and will be reflected in further modeling to modify the IDF ILAW waste  
45 acceptance as appropriate.
- 46 III.11.I.5.a.i The modeling-risk budget tool will include a sensitivity analysis reflecting parameters  
47 and changes to parameters as requested by Ecology.

- 1 III.11.I.5.a.ii If these modeling efforts indicate results within 75% of a performance standard
- 2 [including but not limited to federal drinking water standards (40 CFR 141 and 40 CFR
- 3 143)], Ecology and the Permittees will meet to discuss mitigation measures or modified
- 4 waste acceptance criteria for specific waste forms.
- 5 III.11.I.5.a.iii When considering all the waste forms to be disposed of in IDF, the Permittees shall not
- 6 dispose of any waste that will result (through forward looking modeling or in real
- 7 groundwater concentrations data) in an violation of any state or federal regulatory limit,
- 8 specifically including but not limited to drinking water standards for any constituent as
- 9 defined in 40 CFR 141 and 40 CFR 143.
- 10 III.11.I.6 The Permittees shall not dispose of any waste that is not in compliance with state and
- 11 federal requirements as identified in Chapter 13.0.
- 12 III.11.I.6.a In accordance with DOE's authority under the Atomic Energy Act of 1954, as amended
- 13 and other applicable law, prior to disposing of any mixed immobilized low-activity waste
- 14 (ILAW) in the IDF, DOE will certify to the State of Washington that it has determined
- 15 that such ILAW is not high-level waste and meets the criteria and requirements outlined
- 16 in DOE's consultation with the U.S. Nuclear Regulatory Commission beginning in 1993
- 17 (Letter from R.M Bernero, USNRC to J. Lytle, USDOE, dated March 2, 1993; Letter
- 18 from J Kinzer, USDOE, to C. J. Paperiello, USNRC, Classification of Hanford Low-
- 19 Activity Tank Waste Fraction, dated March 7, 1996; and Letter from C.J. Paperiello,
- 20 USNRC, to J. Kinzer, USDOE, Classification of Hanford Low-Activity Tank Waste
- 21 Fraction, dated June 9, 1997). While the requirement to provide such certification is an
- 22 enforceable obligation of this permit, the provision of such certification does not convey,
- 23 or purport to convey, authority to Ecology to regulate the radioactive hazards of the
- 24 waste under this permit.
- 25 III.11.I.7 IDF Operational Waste Acceptance Criteria
- 26 IDF operational activities (including decontamination, cleanup, and maintenance) will
- 27 generate a small amount of waste. Waste that can meet IDF waste acceptance without
- 28 treatment will be disposed of at the IDF. All other IDF operational waste will be
- 29 managed pursuant to WAC 173-303-200.
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