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**ADDENDUM B
WASTE ANALYSIS PLAN**

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**ADDENDUM B
WASTE ANALYSIS PLAN**

CONTENTS

1		
2		
3	CONTENTS	
4	Executive Summary	B.5
5	Definitions.....	B.6
6	B. WASTE ANALYSIS PLAN.....	B.7
7	B.1 Unit Description.....	B.7
8	B.1.1 Description of Unit Processes and Activities.....	B.7
9	B.1.2 Identification and Classification of Waste	B.10
10	B.2 Waste Confirmation	B.11
11	B.2.1 Pre-Shipment Review	B.11
12	B.2.2 Receipt Verification	B.11
13	B.2.2.2 Chemical Verification Process.....	B.13
14	B.2.3 Waste Acceptance.....	B.15
15	B.3 Selecting Waste Analysis Parameters	B.15
16	B.3.1 Physical Screening Parameters	B.15
17	B.3.2 Chemical Screening Parameters	B.15
18	B.3.3 Other Analysis Parameters.....	B.16
19	B.4 Selecting Sampling Procedures.....	B.17
20	B.4.1 Sampling Strategies	B.17
21	B.4.2 Sampling Methods	B.17
22	B.4.3 Selecting Sampling Equipment.....	B.17
23	B.4.4 Sample Preservation.....	B.17
24	B.4.5 Establishing Quality Assurance and Quality Control for Sampling	B.18
25	B.5 Laboratory Selection and Quality Assurance/Quality Control	B.18
26	B.5.1 Evaluation of Laboratories.....	B.18
27	B.5.2 Quality Assurance/Quality Control Objectives.....	B.18
28	B.5.3 Laboratory Quality Assurance/Quality Control	B.19
29	B.5.4 Data Assessment	B.20
30	B.6 Selecting Waste Re-Evaluation Frequencies	B.21
31	B.6.1 Periodic Re-Evaluation	B.21
32	B.6.2 Re-Evaluation for Cause	B.21
33	B.7 Special Waste Analysis Procedural Requirements	B.21
34	B.7.1 Procedures for Receiving Onsite and Offsite Waste.....	B.21
35	B.7.2 Provisions for Complying with Land Disposal Restriction Requirements	B.21
36	B.8 Recordkeeping	B.22
37	B.9 References.....	B.23

1	FIGURES	
2	Figure B.1.	Waste Confirmation and Acceptance Process for the 325 Hazardous Waste
3		Treatment Units B.24
4		
5	TABLES	
6	Table B.1.	Waste Compatibility Chart B.25
7	Table B.2.	Summary of Test Parameters, Rationales, and Methods B.27
8	Table B.3.	Sample Chemical Disposal/Recycle Request B.28
9		

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2
3
4
5
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**ADDENDUM B
WASTE ANALYSIS PLAN**

EXECUTIVE SUMMARY

12 The 325 Hazardous Waste Treatment Units (325 HWTUs) collect, consolidate, and prepare dangerous
13 waste for shipment. Waste is primarily received from onsite generators and offsite Pacific Northwest
14 National Laboratory (PNNL) facilities. The purpose of this Waste Analysis Plan (WAP) is to document
15 the process to confirm PNNL's knowledge about dangerous waste before storing waste at the
16 325 HWTUs, as required in [WAC 173-303-300](#). The purpose of waste analysis at permitted facilities is
17 to assure that waste can be stored properly.

18 *Waste analysis* at permitted facilities consists of obtaining and reviewing a *detailed chemical, physical,*
19 *and/or biological analysis* of a waste prior to storage. This detailed analysis can consist of *knowledge* of
20 the wastes as defined in [WAC 173-303-040](#), typically provided by the generator, data obtained by direct
21 testing, or a combination of both. When the analysis provided by the generator relies upon knowledge,
22 that knowledge must be documented and confirmed. The waste analysis performed by PNNL waste
23 management staff is used to determine the acceptability of the waste for storage at the 325 HWTUs.

24 This WAP describes the process for inspection and, if necessary, analysis of wastes received at the
325 HWTUs to confirm that the waste matches the identity of the waste on the accompanying shipping
documentation. The WAP also contains a description of the sampling methodologies, analytical
techniques, and processes that are undertaken for confirmatory sampling and analysis of dangerous waste
managed in the 325 HWTUs. Finally, the WAP describes the records that are maintained in order to meet
requirements specified in the Hanford Facility Dangerous Waste Permit.

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DEFINITIONS

Term	Definition
Analysis	Obtaining and reviewing information provided by the waste generator and/or provided by other means to confirm the information provided concerning a waste stream.
Compatible	As applied to suitability of containers, tanks or sampling equipment, <i>compatible</i> means the waste will not react with or otherwise damage the container, tank, or sampling equipment such that the ability of the equipment to contain the waste is not impaired. For determination of compatibility for storage, refer to definition of <i>incompatible waste</i> .
Database	The PNNL waste management database (the Integrated Waste Management System) containing profile, confirmation, storage, and shipment information on each container of waste.
Fingerprint Analysis	Testing of significant parameters expected from a waste (as documented in its approved profile) performed after physical transfer of the waste to the 325 HWTUs. Fingerprint analysis is intended to verify that the waste transferred to the 325 HWTUs matches the profile provided. Fingerprinting is usually performed by visual examination of the waste and/or use of readily available testing methods such as test kits.
Incompatible Waste	Materials/wastes unsuitable for placement in a particular device or facility because it may corrode or decay the containment materials, or is unsuitable for mixing with another waste or material because the mixture might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, fumes, mists, or gases, or flammable fumes or gases. Refer to Table 1.
Inspection	Viewing of the contents of the container, container markings and labeling, number of containers, and/or the container itself as a means of confirming the identity of the waste
Knowledge	Sufficient information about a waste to substitute reliably for direct testing of the waste. To be sufficient and reliable, the <i>knowledge</i> used must provide information necessary to manage the waste in accordance with the requirements of this chapter. [WAC 173-303-040] Note: <i>Knowledge</i> may be used by itself or in combination with testing to designate as waste pursuant to WAC 173-303-070(3)(c) , or to obtain a detailed chemical, physical, and/or biological analysis of a waste as required in WAC 173-303-300(2) .
Profile	A <i>detailed physical, chemical, and/or biological analysis of a dangerous waste</i> provided by the waste generator in order to allow the 325 HWTUs staff to perform waste analysis. The Chemical Disposal/Recycle Request (CDRR) and/or Radioactive Waste Disposal Request (RWDR) at PNNL currently serve as the waste profile. A sample CDRR is shown in Table B.3.
Testing	Performance of a procedure that yields a quantitative or qualitative evaluation of the type and/or quantity of materials present. Sometimes referred to as <i>analysis</i> or <i>laboratory analysis</i> , but for purposes of this procedure, the term <i>testing</i> is used to distinguish it from waste analysis (refer to definition of <i>analysis</i> above).
Verification	Determination that the waste in question is that waste described on the approved profile. Verification may include inspection and/or fingerprint analysis.
Waste Stream	Wastes that are physically or chemically different from each other; wastes that are generated from different types of processes; or wastes that are of the same type, but generated at different points in the process or at different process locations.

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1 **B. WASTE ANALYSIS PLAN**

2 **B.1 Unit Description**

3 The 325 HWTUs are dangerous waste treatment and storage units owned and operated by DOE and co-
4 operated by Pacific Northwest National Laboratory (PNNL). The 325 HWTUs are used for the
5 collection, consolidation, packaging, storage, treatment, and preparation for transport and disposal of
6 dangerous waste, universal waste, and recyclables, including mixed waste. It is an integral part of the
7 PNNL waste management system.

8 **B.1.1 Description of Unit Processes and Activities**

9 The 325 HWTUs are units within the 325 Building, located in the 300 Area on the Hanford Facility (refer
10 to Addendum A for location).

11 The 325 Building includes the following: (1) a central portion (completed in 1953) that consists of three
12 floors (basement, ground, and second) containing general-purpose laboratories, provided with special
13 ventilation and work enclosures; (2) a south (front) wing containing office space, locker rooms, and a
14 lunch room; and (3) east and west wings containing shielded enclosures with remote manipulators. The
15 Shielded Analytical Laboratory (SAL) is located in Rooms 32, 200, 201, 202, and 203. The HWTU is
16 located in Rooms 520, 524 and 528. The Cask Handling Area is located in Rooms 603 and 604A in the
17 east wing. The Truck Lock is Room 610 of the east wing. The 3714 Pad is a concrete pad and
18 surrounding soil located just northeast of the 325 Building that contains the foundation for the former
19 3714 Building, which was demolished in 2011.

20 The 325 HWTUs store and treat dangerous waste generated by Hanford Facility programs (primarily from
21 research activities in the 325 Building and other PNNL facilities) and potentially from other onsite/offsite
22 laboratories. Storage in containers occurs in each unit, and bench- or small-scale treatment of dangerous
23 waste in containers occurs in the HWTU, the Cask Handling Area, and the SAL. Larger-scale treatment
24 in containers is limited to macroencapsulation, solidification or stabilization and takes place in the Cask
25 Handling Area, the Truck Lock, or at the 3714 Pad. At the SAL, dangerous waste liquid is stored in a
26 tank in Room 32. As described in further detail in Addendum C, permit conditions applicable to
27 container management in the 325 HWTUs are established in accordance with [WAC 173-303-630](#).
28 Similarly, permit conditions applicable to the SAL tank have been established in accordance with
29 [WAC 173-303-640](#).

30 The fire water-collection tank, which serves rooms 520 and 528 of the HWTU, is located beneath Room
31 520 in the basement of the 325 Building. The rectangular tank measures 1.65 meters by 2.25 meters by
32 1.92 meters, and has a 22,710-liter capacity. The sides and floor of the tank are constructed of epoxy-
33 coated carbon-steel plate. The steel sides and floor provide support for the chemical-resistant
34 polypropylene liner. The tank is secured to the concrete floor of the 325 Building with 1.3-centimeter
35 bolts at 1.82-meter intervals.

36 **B.1.1.1 How Waste is Accepted, Moved, Processed, and Managed**

37 PNNL's waste management organization maintains a waste management database to support the
38 identification and tracking of waste from profiling through final disposition, and maintain the information
39 required by permit conditions established in accordance with [WAC 173-303-380](#). This section contains
40 information on waste acceptance and analysis. Waste movement, processing, and management are
41 discussed in Addendum C.

42 **B.1.1.1.1 Narrative Process Descriptions**

43 Wastes to be managed at the 325 HWTUs are generated by PNNL's research laboratory and support
44 activities, usually in small quantities. These wastes are managed in accordance with generator
45 requirements prior to being submitted for transfer to the 325 HWTUs during the accumulation period.

46 **B.1.1.1.2 Narrative Waste Characterization**

47 Waste streams accepted for storage at the 325 HWTUs can be categorized as follows:

1 Listed Waste from Specific and Nonspecific Sources

2 Certain wastes from specific and nonspecific sources identified in [WAC 173-303-9904](#) (designated with
3 'F' waste codes) are accepted at the 325 HWTUs for storage and subsequent shipment. Addendum A
4 identifies the dangerous waste numbers and estimated annual management quantities for each. These
5 estimated annual management quantities are the maximum allowable amounts for storage or treatment in
6 the 325 HWTUs.

7 Spent solvents may be halogenated or non-halogenated. Spent degreasing solvents (F001) as well as
8 spent halogenated solvents (F002) are generated primarily in research activities, with a few generated by
9 maintenance activities. Spent non-halogenated solvents (F003, F004, and F005) are also primarily
10 generated by research activities, with a few generated by maintenance activities. WPCB state source
11 waste (PCB electrical equipment waste) has been generated in limited amounts in the past and could be
12 stored at the 325 HWTUs if future generating activities occur.

13 Discarded Commercial Chemical Products

14 Discarded commercial chemical products are those described in [WAC 173-303-081](#). Addendum A
15 identifies all of the discarded commercial chemical products listed in [WAC 173-303-9903](#), as research
16 activities have the potential to generate any of these wastes. Estimated annual management quantities are
17 given based on prior experience.

18 These wastes ('P' and 'U' waste codes) are typically received at the 325 HWTUs in the manufacturer's
19 original container. These containers are usually 4 liters or less in volume, and are glass or polyethylene
20 jars or bottles, or metal cans. Such wastes may be discarded at the end of a project, as part of a lab
21 cleanout, or after the passage of an expiration date, that renders the chemical non-useable due to quality
22 assurance requirements of Laboratory projects.

23 Characteristic Waste

24 Some wastes from research activities and maintenance, although not listed pursuant to [WAC 173-303-081](#)
25 or [-082](#), exhibit one or more characteristics of dangerous waste described in [WAC 173-303-090](#).
26 Although wastes exhibiting any of these characteristics are routinely managed at the 325 HWTUs, the
27 most prevalent waste types are ignitable wastes (D001), corrosive wastes (D002), solid corrosives
28 (WSC2), and wastes containing chromium (D007) and/or lead (D008). All characteristic waste codes and
29 estimated annual management quantities are given in Addendum A. These estimated annual management
30 quantities are the maximum allowable amounts for storage or treatment in the 325 HWTUs.

31 Criteria Waste (Toxic and/or Persistent)

32 Wastes from research or maintenance activities that is not a listed waste and does not exhibit a
33 characteristic of dangerous waste may designate as state dangerous waste criteria wastes, pursuant to
34 [WAC 173-303-100](#). Wastes exhibiting the criteria of toxicity (WT02) are PNNL's most prevalent waste
35 type. All criteria waste codes and their estimated annual management quantities are given in
36 Addendum A.

37 **B.1.1.1.3 Waste Acceptance Process**

38 Waste Submittal

39 The waste analysis process for the 325 HWTUs begins when the generating unit completes and transmits
40 a profile to the waste management organization for the waste stream. This profile is currently submitted
41 electronically into the waste management database by field-deployed waste management staff. The
42 profile provides the *detailed physical, chemical, and/or biological analysis* of each waste submitted.
43 Information required includes a physical description of the waste, accounting for 100% of the contents,
44 and identity and concentration of the hazardous constituents known or reasonably expected to be in the
45 waste; location and container information; identity of the waste generator; and the hazards of the waste.
46 Profile information includes process knowledge and any available testing data on the waste.

1 Profile information must meet the following four distinct information needs for management of dangerous
2 waste at the 325 HWTUs.

- 3 • Verify that wastes are properly designated in accordance with [WAC 173-303](#) and whether those
4 wastes are DW or EHW;
- 5 • Identify or verify the applicable treatment standards under [WAC 173-303-140](#) and whether the
6 waste complies with applicable treatment standards under [WAC 173-303-140](#);
- 7 • Identify and verify specific characteristics of waste in solid, liquid, or solution form;
- 8 • Determine how to safely handle, transport, analyze, store, and dispose of the waste.

9 Evaluation and Acceptance

10 After a profile is submitted, waste management staff first performs a consistency check of profile
11 information. For instance, profile data is checked to confirm that percentages of waste constituents listed
12 add to 100%, physical state is consistent with chemical description, and that chemicals are compatible
13 with container type. The purpose of this check is to determine if any process knowledge provided
14 constitutes *knowledge* for purposes of the Dangerous Waste Regulations, i.e. is adequate to substitute for
15 testing information in order to quantify constituents and characteristics, and enable proper management of
16 the waste in accordance with the Dangerous Waste Regulations. Any information discrepancies are noted
17 and resolved with the profile submitter. Discrepancies that cannot be resolved result in rejection of the
18 waste profile.

19 Once the consistency check is complete, waste designation information is verified. Any constituent
20 regulated under other regulations is also checked (e.g. PCBs, asbestos) and DOT hazard class and packing
21 group information is determined based on the hazard description given in DOT regulations. Applicable
22 LDR treatment standards are identified and underlying hazardous constituents (UHC) are identified, as
23 appropriate. The verified waste codes, other identification, LDR treatment standard and UHC
24 information, and DOT hazard class and packing group information associated with the waste are
25 confirmed for correct entry in the waste management database.

26 Once designation verification is complete, the waste management staff determines if a waste is
27 unacceptable for storage (e.g. waste code not listed in Addendum A), and storage capacity limits are
28 checked. If the waste is confirmed to meet the storage type and quantity limitations of Addenda A, B, and
29 C, it meets the waste acceptance criteria, and is acceptable for storage. The approved waste is assigned a
30 unique identification number, cell location, and hazard classification. The profile is noted as *approved*.

31 Confirmation of Knowledge

32 In PNNL's experience, process knowledge from the generator is generally sufficient to meet the
33 requirements for a *detailed chemical, physical, and/or biological analysis* of wastes accepted at the
34 325 HWTUs for the following reasons:

- 35 • Wastes stored at the 325 HWTUs are generated on the Hanford Site and/or by PNNL research
36 programs who maintain effective administrative control over individual waste generating units
37 (i.e., the same organization generates the waste and operates the storage unit).
- 38 • Some wastes stored at the 325 HWTUs are discarded chemical products for which knowledge of
39 waste characteristics is available without further analysis.
- 40 • Most of the waste stored at the 325 HWTUs is a result of research activities that are carefully
41 controlled and documented; this documentation includes information on chemical constituent
42 inputs and outputs.

43 To confirm the sufficiency and reliability of the knowledge provided by generators, waste management
44 activities (e.g. satellite accumulation areas) are co-managed by field-deployed waste management staff.
45 These staff assists in obtaining the data and other information utilized to prepare the profile, and review
46 the quality and sufficiency of the information provided in order to confirm that it is adequate for safely

1 managing the waste. Other methods for confirmation noted in [WAC 173-303-300\(2\)\(a\)](#) may be used
2 instead of or in conjunction with onsite visits and data review in special situations.

3 Instances where the 325 HWTUs require testing to corroborate process knowledge include the following:

- 4 • When waste management personnel have reason to suspect a change in the waste based on
5 inconsistencies on the profile or in packaging or labeling of the waste
- 6 • When the information submitted previously by a generator does not match the characteristics of
7 the waste that was submitted
- 8 • When a receiving TSD facility rejects the waste because waste verification at that facility reveals
9 an inconsistency with the waste profile provided by the 325 HWTUs

10 Testing is not required when the inconsistency deals with a listing based on process usage (e.g. F001
11 designation based on use as a solvent).

12 If a waste stream is profiled and multiple shipments of the same waste stream are accepted using the same
13 approved profile, it must be reevaluated when the generator and/or the 325 HWTUs personnel have
14 reason to believe the process generating the waste, or the characteristic or the chemical constituents of the
15 waste stream, have changed, or there is a manifest discrepancy (for wastes received from off-site),
16 shipping paper discrepancy (receipt of wastes from on-site dangerous waste management units) or failure
17 of the waste verification process. Even if no such instances occur, the waste stream will be re-profiled
18 and re-evaluated at least annually.

19 **B.1.2 Identification and Classification of Waste**

20 The 325 HWTUs dangerous waste management units are used for container and tank storage and
21 treatment of dangerous waste. As a result, the following waste types are not accepted for storage:

- 22 • Bulk solids (non-containerized)

23 Dangerous waste containing source, special nuclear, or byproduct material under the Atomic Energy Act
24 (i.e. mixed waste) is only accepted when already containerized or when it is to be managed in the
25 permitted tank in Room 32 of the SAL.

26 Refer to Addendum C, Sections C.1.10, C.1.11, and C.2.1.5 for precautions taken in the storage of
27 various types of wastes (e.g. ignitable, reactive, or incompatible wastes).

28 A wide range of waste container sizes/volumes is typically used to manage wastes at the 325 HWTUs due
29 to the variety of research and maintenance activities supported. Refer to Addendum C for a description of
30 secondary containment and container types and sizes managed. No individual container of material
31 requiring secondary containment per [WAC 173-303-630\(7\)](#) in excess of the secondary containment
32 capacity of the location where the waste will be managed in OUG-5 dangerous waste management units
33 will be accepted or managed at the unit without management approval and additional secondary
34 containment system capacity provided as required by permit conditions established pursuant to
35 [WAC 173-303-630\(7\)](#). No shipment of bulk liquid greater than the operational capacity of the storage
36 tank (1218 liters) will be accepted.

37 Containerized wastes managed include labpacks conforming to the standards of [WAC 173-303-161](#), and
38 hazardous debris and contaminated soil as defined in [40 CFR 268.2](#) (incorporated by reference at
39 [WAC 173-303-140](#)).

40 Along with waste received for storage and treatment, the 325 HWTUs also generates dangerous waste as
41 a byproduct of waste handling and treatment activities. Typically, these wastes include personal
42 protective equipment, rags, and other spent materials that designate as hazardous waste when discarded.
43 Such wastes are accumulated at the 325 HWTUs in satellite or 90-day accumulation areas (as appropriate)
44 and a profile submitted for formal acceptance into the unit.

1 **B.1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity**

2 Refer to Addendum A for the waste numbers, quantities, types of treatment performed, and design
3 capacity for the 325 HWTUs.

4 **B.2 Waste Confirmation**

5 **B.2.1 Pre-Shipment Review**

6 Once a waste profile has been approved per the process in Section B.1.1.1.2, it is scheduled for pickup by
7 Waste Management staff. At pickup, waste management organization staff visits the generator storage
8 area and make a final inspection of the waste containers to determine whether the profile and contents
9 label information match completely, and whether the containers are adequate for transport to and storage
10 at the 325 HWTUs. Examples of acceptable packaging include laboratory reagents in their original
11 bottles, U.S. Department of Transportation-approved containers, spray cans, sealed ampules, paint cans,
12 and leaking containers that have been over packed. Waste management organization staff have the
13 authority to determine whether a container is in poor condition or inadequate for storage using the criteria
14 referenced by [WAC 173 303 190](#) and to use professional judgment to determine whether the packaging
15 could leak during handling, storage, and/or treatment. The purpose of visual inspection is to confirm that
16 the waste matches the description in the profile. As a quality assurance/quality control measure, only
17 trained and experienced personnel conduct visual inspection of wastes to verify that the waste being
18 picked up matches the description provided by the waste generator and evaluated during the waste
19 verification/waste acceptance process.

20 If the waste is a discarded commercial chemical product, the contents of the container are inspected to
21 verify that they match the description of the product. For other waste, e.g., spent solvents, waste
22 descriptions are compared with the products in use at the generating unit to determine if the profile
23 description is accurate. If, after visual inspection of the waste, any doubt remains as to the identity of the
24 waste, the waste is not picked up. The generator is required to resubmit the profile with accurate
25 information.

26 After inspection of the waste at the generating unit, and the information in the profile matches with the
27 container labeling and visual inspection, the waste is picked up for transport to the 325 HWTUs. Any
28 appropriate DOT labeling is applied. In addition, each waste container is labeled with a physical
29 description of the waste (accounting for 100% of the contents), identity, and concentration of the
30 hazardous constituents known or reasonably expected to be in the waste, and major risk(s). This
31 information helps the waste handlers verify safe handling, storage, retrieval, and transportation of
32 dangerous waste.

33 Most of the waste stored at the 325 HWTUs is generated on the Hanford Site and/or by PNNL research
34 programs within the 300 Area. All transportation of dangerous waste to the 325 HWTUs will be
35 according to the requirements of Permit Condition II.N. Additional requirements for waste generated
36 outside the 300 Area include proper manifesting (if appropriate) to the 325 HWTUs and utilizing proper
37 packaging for transport over public roadways. Although PNNL waste generated outside of the 300 Area
38 is considered to be generated offsite since it may be transported to the 325 HWTUs on roads accessible to
39 the public, it is generated under the same administrative controls as wastes that are generated *onsite*
40 (i.e., in the 300 Area). Therefore, no distinction is necessary between *on-site* and *off-site* for PNNL waste
41 with respect to the waste analysis requirements of this WAP.

42 **B.2.2 Receipt Verification**

43 The waste acceptance procedure for receipt of waste from both on- and off-site is based on the following
44 requirements. These verification procedures are summarized in Table B.2.

1 **B.2.2.1 Physical Verification Process**

2 **B.2.2.1.1 Inspection of Shipping Papers/Documentation**

3 Document Verification

4 The necessary documentation (e.g. manifest or onsite shipping paper) for the entire shipment are verified
5 (i.e., signatures are dated, all waste containers included in the shipment are accounted for and correctly
6 indicated on the shipment documentation, there is consistency throughout the different shipment
7 documentation, and the documentation matches the labels on the containers).

8 B.2.2.1.1.1 Response to Significant Discrepancies. The primary concern during acceptance of
9 containers for storage is improper packaging or manifest discrepancies. Containers with such
10 discrepancies are not accepted at the 325 HWTUs until the discrepancy has been resolved. Depending on
11 the nature of the condition, such discrepancies can be resolved using one or more of the following
12 alternatives.

- 13 • Incorrect or incomplete entries on the uniform hazardous waste manifest or on-site shipping
14 documentation can be corrected or completed with concurrence of the onsite generator or offsite
15 generator. Corrections are made by drawing a single line through the incorrect entry. Corrected
16 entries are initialed and dated by the individual making the correction.
- 17 • The waste packages can be held and the onsite generator or offsite waste generator requested to
18 provide verbal or written instructions for use in correcting the condition before the waste is
19 accepted.
- 20 • Waste packages can be returned as unacceptable.
- 21 • If a noncompliant dangerous waste package is received from an offsite waste generator, the waste
22 package is non-returnable because of condition, packaging, etc., and if an agreement cannot be
23 reached among, the involved parties to resolve the noncompliant condition, then the issue will be
24 referred to DOE for resolution. Ecology will be notified in writing if a discrepancy is not
25 resolved within 15 days after receiving a noncompliant shipment. Pending resolution, such waste
26 packages, although not accepted, might be placed in the 325 HWTUs. The package(s) will be
27 segregated from other waste, and an entry will be made into the 325 HWTUs logbook describing
28 the actions that were taken to store the packages in a safe manner until a resolution has been
29 reached.

30 B.2.2.1.1.2 Activation of Contingency Plan for Damaged Shipment. If waste shipments arrive at the
31 325 HWTUs in a condition that presents a hazard to public health or the environment, the Building
32 Emergency Procedure is implemented as described in Addendum J, Contingency Plan.

33 Inspection of Waste Containers

34 The condition of waste containers is checked to verify that the containers are in good condition (i.e., free
35 of holes and punctures). Shielded, classified, and remote-handled mixed waste is not physically inspected
36 except for examination of the external container.

37 Inspection of Container Labeling

38 Shipment documentation is used to verify that the containers are labeled with the appropriate
39 Hazardous/Dangerous Waste labeling and associated markings according to the contents of the waste
40 container.

41 Acceptance of Waste Containers

42 The 325 HWTUs personnel sign the shipment documents and retain a copy. Any discrepancies and their
43 resolution are recorded in the waste management database and the Hanford Facility Operating Record,
44 325 HWTUs File.

1 **B.2.2.2 Chemical Verification Process**

2 The purpose of chemical verification is to verify that the waste received matches that described in the
3 waste profile. Onsite and offsite waste received at the 325 HWTUs will receive chemical verification
4 at the unit according to the following process.

5 **B.2.2.2.1 Exceptions to Chemical Verification**

- 6 • Laboratory reagents and commercial products such as paint, lubricants, solvent, or cleaning
7 products are not subject to analytical verification when received in their original containers.
- 8 • Heterogeneous wastes (such as discarded machinery, shop rags, labpacks, and debris) that do not
9 yield a representative sample are only subject to the physical screening process.
- 10 • Asbestos wastes.
- 11 • Spill cleanup wastes resulting from the spill or release of known materials.
- 12 • Wastes previously receiving chemical verification at the accumulation area (e.g. North Richland)
13 in accordance with the requirements of this section B.2.2.2.
- 14 • Any mixed waste with a dose rate exceeding 20 millirem/hour at contact.
- 15 • Any transuranic waste (waste containing more than 100 nanocuries/gram of transuranic isotopes).
- 16 • Any shielded, classified, or remote-handled waste.

17 **B.2.2.2.1.1** Waste designated for listing criteria based on process information (e.g. F001 waste
18 identified as a used solvent).

19 **B.2.2.2.2 Number of Verifications**

20 Five percent of waste containers received from PNNL generating locations will receive chemical
21 verification each month. The number of containers to be verified in any month is based on five percent of
22 the number of containers received at the 325 HWTUs during the previous three months, divided by three,
23 exclusive of those exempt from verification as described in Section B.2.2.2.1 above. Fractional numbers
24 are rounded upwards. For example, if 40 qualifying containers are received in June 50 containers in July,
25 and 60 containers in August, an average of 50 per month, 3 containers ($50 \times 5\% = 2.5$, rounded to 3)
26 would be sampled and analytically verified. Note that during the first three months of operation under
27 this WAP, the *previous three months* are the three calendar months preceding the effective date of this
28 Permit.

29 Ten percent of the number of containers on any shipment from offsite (except PNNL generating
30 locations) receives chemical verification. If a shipment contains waste from more than one generator, ten
31 percent of containers from each generator receive chemical verification.

32 **B.2.2.2.3 Selection Process**

33 Randomly selected containers from onsite will receive chemical verification until the required number of
34 verifications necessary for that month is accomplished. A variety of non-PNNL generating locations and
35 waste types, if any, will be analyzed to the extent practicable. However, the number of containers
36 selected from any given shipment will be based on the number of containers scheduled for pickup during
37 the current month as well as the number of containers in the individual shipment that are subject to
38 chemical verification.

39 **B.2.2.2.4 Sampling**

40 Waste containers selected for verification are sampled using the methods in [WAC 173-303-110\(2\)](#) for
41 representative samples, or utilizing a similar method suitable to the container. For instance, to sample a
42 one-liter bottle of homogeneous liquid, glass tubing, or a pipet would be utilized to obtain a representative
43 sample instead of a COLIWASA. Generally, these samples are analyzed immediately, so preservation
44 techniques are not utilized. If the samples must be stored, they will be preserved in accordance with the
45 requirements of the analytical technique being used (Table B.2).

1 **B.2.2.2.5 Testing Methods**

2 The methods utilized for chemical verification at the 325 HWTUs are selected based on the
3 appropriateness for the waste being verified. Tests performed are selected from the following.

4 Water Miscibility/Separable Organics

5 Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits. These tests
6 are not performed on materials known to be organic peroxides, ethers, and/or water reactive.

7 Oxidizers

8 Performed utilizing oxidizer Hazcat© test kits per the instructions given in those kits. These tests are not
9 performed on materials known to be organic peroxides, ethers, and/or water reactive.

10 pH

11 SW-846 Method 9040, 9041, or 9045 (by pH meter or pH paper). This test will not be performed on
12 organic liquids.

13 Cyanides

14 Performed utilizing cyanide Hazcat© test kits per the instructions given in those kits.

15 Sulfides

16 Performed utilizing sulfide Hazcat© test kits per the instructions given in those kits.

17 Halogenated/Volatile Organics

18 Examination with a photoionizer or flame ionizer to determine if the waste contains volatile organic
19 compounds. Clor-D-Tect© kits may be used to detect organic halogens.

20 **B.2.2.2.6 Quality Assurance/Quality Control for Analytical Verification**

21 Each testing process is subject to QA/QC requirements as follows. The data quality objectives for these
22 analyses are given in Section B.4.5.

23 Water Miscibility/Separable Organics

24 Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits using test
25 kits that are not older than the expiration date specified on the kit. Data interpretations are performed
26 utilizing the manufacturer's instructions for the test kit.

27 Oxidizers

28 Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration
29 date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for
30 the test kit.

31 pH

32 Calibration of pH meters and pH paper is performed as required by the appropriate method being used
33 (SW-846 method 9040, 9041, or 9045).

34 Cyanides

35 Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration
36 date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for
37 the test kit.

38 Sulfides

39 Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration
40 date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for
41 the test kit.

1 Halogenated/Volatile Organics.

2 The photoionizer is calibrated daily (when in use) to a standard gas mixture in accordance with
3 manufacturer's instructions. Data interpretations are performed utilizing observed data (meter readings)
4 with adjustment as necessary based on the relative responsiveness of the waste compared to the standard
5 mixture utilized for calibration. These adjustments are given in photoionizer manufacturer's literature.
6 Clor-D-Tect© tests are performed according to manufacturer's instructions utilizing test kits that are not
7 older than the expiration date specified on the kit. Data interpretations are performed utilizing the
8 manufacturer's instructions for the test kit.

9 **B.2.3 Waste Acceptance**

10 Once waste items have been confirmed by physical and necessary chemical verification, as described
11 above, the waste is considered *accepted* and placed in the designated location in the unit determined prior
12 to pickup. Containers of dangerous waste are managed according to the requirements of Addendum C.

13 **B.3 Selecting Waste Analysis Parameters**

14 Physical and chemical screening parameters are chosen from those in Sections B.3.1 and B.3.2,
15 respectively, as described in Section B.2.2.2 and B.2.2.3 of this WAP. Parameters for confirmation of
16 designation and compliance with LDR requirements are given in Section B.3.3. Parameters, methods,
17 and rationale for physical and chemical screening parameters and the pre-shipment review (Section B.2.1)
18 are summarized in Table B.2.

19 **B.3.1 Physical Screening Parameters**

20 **B.3.1.1 Visual Inspection, Rationale**

21 Waste containers (and contents visible through the container or through an easily and safely opened lid)
22 are examined to confirm that waste matches the physical description given in the waste profile
23 documentation. Labeling examination also identifies waste prohibited by LDR requirements related to
24 downstream TSD unit acceptance criteria. For instance, an organic destined for incineration might
25 contain acids that the intended facility does not have permit authorization to treat by DEACT.

26 **B.3.1.2 Visual Inspection, Method**

27 Waste containers are inspected by trained, experienced personnel to verify that it matches the description
28 in the profile. If the waste is a discarded product, the contents of the container are inspected to verify that
29 they match the description of the product. For other waste, e.g., spent solvents, waste descriptions are
30 compared with the products in use at the generating unit. This information is compared to the description
31 of the waste in the profile. If, after visual inspection of the waste and inquiry of the generating unit
32 personnel, any doubt remains as to the identity of the waste, the waste is not picked up and required to be
33 re-profiled by the generator.

34 **B.3.1.3 Visual Inspection, Failure Criteria**

35 Waste does not correlate with the description of the waste (e.g. color, layering, consistency).

36 **B.3.2 Chemical Screening Parameters**

37 **B.3.2.1 Water Miscibility**

38 **Rationale:** Water miscibility/separable organics testing is chosen to confirm that waste matches that
39 described on waste acceptance documentation, identify separable organics, and/or identify waste
40 prohibited by downstream TSD unit acceptance criteria. Not performed on organic peroxides, ether, or
41 water-reactive wastes.

42 **Method:** Performed using water solubility Hazcat© test kits per the instructions given in those kits.

43 **Failure Criteria:** Test results do not confirm the presence or absence of constituents of interest.

1 **B.3.2.2 Oxidizer**

2 **Rationale:** The oxidizer test is performed to confirm that waste matches that described on waste
3 acceptance documentation, and verify waste requires oxidizer management pursuant to
4 [WAC 173-303-395](#) (1)(b) at the 325 HWTUs. Not performed on organic peroxides, ether, or water-
5 reactive compounds.

6 **Method:** HazCat© Oxidizer Screen Test Kit

7 **Failure Criteria:** Test results do not confirm the presence or absence of constituents of interest.

8 **B.3.2.3 pH**

9 **Rationale:** Used to confirm that waste matches that described on waste acceptance documentation and to
10 verify compliance with [WAC 173-303-395](#)(1)(b) concerning separation of incompatible wastes. (Not
11 used for solids or organic liquids).

12 **Method:** pH Screen [SW-846](#) Method 9040C or 9045 (pH meter) or 9041A (pH paper).

13 **Failure Criteria:** Test result does not match the pH given in the profile within a 4.0 pH unit tolerance, or
14 the observed pH results in a designation change (e.g. profiled as non-corrosive, but exhibits a pH ≤ 2.0 or
15 ≥ 12.5).

16 **B.3.2.4 Cyanides**

17 **Rationale:** Confirm that waste matches that described on waste acceptance documentation; verify waste
18 requires compliance with [WAC 173-303-395](#)(1)(b) concerning separation of incompatible wastes.

19 **Method:** HazCat© Cyanide Screen Test Kit

20 **Failure Criteria:** Test results do not confirm the presence or absence of cyanide.

21 **B.3.2.5 Sulfides**

22 **Rationale:** Confirm that waste matches that described on waste acceptance documentation; verify waste
23 requires compliance with [WAC 173-303-395](#)(1)(b) concerning separation of incompatible wastes.

24 **Method:** HazCat© Sulfide Screen Test Kit

25 **Failure Criteria:** Test results do not confirm the presence or absence of sulfide.

26 **B.3.2.6 Halogenated/Volatile Organic Compounds**

27 **Rationale:** Confirm that waste matches that described on waste acceptance documentation

28 **Method:** Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©

29 **Failure Criteria:** Test results do not confirm the presence or absence of organics (photoionizer or flame
30 ionizer testing) or of halogenated organics (Clor-D-Tect Kits).

31 If a waste is determined to have failed any of the tests performed above, the discrepancy resolution
32 process described in Section B.2.2.1.1.1.1 of this WAP is utilized to resolve the discrepancy. If the
33 discrepancy cannot be easily resolved, the waste is returned to the generator and must be re-profiled prior
34 to consideration for acceptance.

35 **B.3.3 Other Analysis Parameters**

36 The 325 HWTUs does not have any process vents that manage hazardous waste with organic
37 concentrations of at least 10 parts per million by weight percent, or pumps, or compressors used more
38 than 300 hours per year that come into contact with hazardous waste with an organic concentration of at
39 least 10 percent by weight. As a result, no special waste analysis requirements for volatile organics are
40 required by [WAC 173-303-690](#) or [-691](#).

41 A variety of small volume chemical wastes is generated by PNNL's research laboratory activities. These
42 containers typically range in sizes from 10 ml to 5 gallons. These wastes are brought to the 325 HWTUs

1 and segregated by compatibility for storage (refer to *incompatible waste* in the definitions section of this
2 WAP) in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to
3 55-gallon drum. All containers having a design capacity greater than 0.1 m³ to less than or equal to
4 0.46 m³ are equipped with a cover and comply with all applicable Department of Transportation
5 regulations on packaging hazardous waste for transport under [49 CFR 178](#).

6 DOT approved intermediate bulk packaging may be used for some wastes in a solid form and containing
7 less than 500 parts per million volume (ppmv) volatile organics and/or meets the LDR treatment
8 standards for the waste with regard to organic hazardous constituents. These containers range in size
9 from 0.1 cu yard (27 cu ft) to 1.6 cu yard (43 cu ft). When intermediate bulk packaging is used for
10 dangerous waste, determination of organics content will comply with waste determination procedures of
11 [40 CFR 264.1083](#), incorporated by reference at [WAC 173-303-692\(2\)](#). Alternatively, waste will be
12 containerized compliant with [40 CFR 264.1086](#), as described in Addendum C, Section C.3, prior to being
13 placed in the intermediate bulk packaging for transport.

14 **B.4 Selecting Sampling Procedures**

15 **B.4.1 Sampling Strategies**

16 Samples are collected for chemical screening as required by Section B.2.2.2 of this WAP. Sample
17 collection methods conform to the representative sample methods referenced in [WAC 173-303-110\(2\)](#).

18 **B.4.2 Sampling Methods**

19 In all instances, sampling methods will conform to the representative sample method referenced in
20 [WAC 173-303-110\(2\)](#), i.e., ASTM standards for solids and [SW-846](#) for liquids. Some adaptation of the
21 method may be necessary for small containers being sampled for chemical screening, as discussed in
22 Section B.2.2.2.4. Exceptions to the methods may also be used if permissible pursuant to
23 [WAC 173-303-110](#), NRC/EPA *Clarification of RCRA Hazardous Waste Testing Requirements for Low-
24 Level Radioactive Mixed Waste – Final Guidance* (62 Federal Register 62080, November 20, 1997), Data
25 Quality Objectives, and/or an alternative approved by Ecology pursuant to the permit modification
26 process. The specific sampling methods and equipment used varies with the chemical and physical nature
27 of the waste material and the sampling circumstances.

28 **B.4.3 Selecting Sampling Equipment**

29 Representative samples of liquid waste from containers (vertical *core sections*) are typically obtained
30 using a composite liquid waste sampler (COLIWASA) or tubing, as appropriate. The sampler is long
31 enough to reach the bottom of the container in order to provide a representative sample of all phases of
32 the containerized liquid waste. If a liquid waste has more than one phase, each phase is separated for
33 individual testing, depending on the waste management pathways of the phases.

34 Other waste types that might require sampling are sludges, powders, and granules. In general, nonviscous
35 sludges are sampled using a COLIWASA. Highly viscous sludges and cohesive solids are sampled using
36 a trier, as described in [ASTM](#) Standard D1452-80. Dry powders and granules are sampled using a thief,
37 as described in [ASTM](#) Standard D346-75.

38 Samplers are constructed of material compatible with the waste. In general, aqueous liquids are sampled
39 using polyethylene samplers, organic liquids using glass samplers, and solids using polyethylene
40 samplers. Disposable samplers are used whenever possible to eliminate the potential for cross-
41 contamination. If non-disposable sampling equipment is used, it is decontaminated between samples as
42 necessary to ensure subsequent samples are representative of the wastes being sampled.

43 **B.4.4 Sample Preservation**

44 All sample containers, preservation techniques, and hold times follow [SW-846](#) protocol. Many samples
45 are immediately analyzed at the 325 HWTUs or in nearby laboratories in the 325 Building and are not
46 preserved.

1 **B.4.5 Establishing Quality Assurance and Quality Control for Sampling**

2 Pacific Northwest National Laboratory is committed to maintaining a high standard of quality for all of its
3 activities. A crucial element in maintaining that standard is a quality-assurance program that provides
4 management controls for conducting activities in a planned and controlled manner and enabling the
5 verification of those activities.

6 The QA/QC objective of the 325 HWTUs is to control and characterize errors associated with collected
7 data and to illustrate that waste testing has been performed according to specification in this waste
8 analysis plan.

9 The data-quality objectives (DQO) for the waste sampling and data analyses are as follows:

- 10 • Determine if waste samples are representative of the contents of the containers at the time the
11 samples were taken.
- 12 • Determine if waste accepted for storage meets the 325 HWTUs waste-acceptance criteria
13 (Addendum B).
- 14 • Determine if waste to be accepted match the corresponding waste description in the approved
15 waste profile.

16 **B.5 Laboratory Selection and Quality Assurance/Quality Control**

17 **B.5.1 Evaluation of Laboratories**

18 Laboratory selection is limited. Preference will be given to any PNNL facility or other laboratories on the
19 Hanford Facility that exhibit-demonstrated experience and capabilities in four major areas:

- 20 • Comprehensive written QA/QC program based on DOE-RL requirements specifically for that
21 laboratory
- 22 • Audited for effective implementation of QA/QC program
- 23 • Participate in performance-evaluation samples to demonstrate analytical proficiency
- 24 • Demonstrated ability to produce analytical data meeting the data quality requirements of this
25 WAP.

26 All laboratories (onsite or offsite) are required to have the following QA/QC documentation:

- 27 • Daily analytical data generated in the contracted analytical laboratories are controlled by the
28 implementation of an analytical laboratory QA plan.
- 29 • Before commencement of the contract for analytical work, the laboratory will have its QA plan
30 available for review. At a minimum, the QA plan will document the following:
 - 31 • Sample custody and management practices
 - 32 • Requirements for sample preparation and analytical procedures
 - 33 • Instrument maintenance and calibration requirements
 - 34 • Internal QA/QC measures, including the use of method blanks
 - 35 • Required sample preservation protocols
 - 36 • Analysis capabilities

37 **B.5.2 Quality Assurance/Quality Control Objectives**

38 The objective of the QA/QC program is to control and characterize any errors associated with the
39 collected data and to confirm that the data collected is adequate for its intended purpose. Quality-
40 assurance activities, such as the use of standard methods for locating and collecting samples, are intended
41 to limit the introduction of error. Quality-control activities, such as the collection of duplicate samples
42 and the inclusion of blanks in sample sets, are intended to provide the information required to characterize
43 any errors in the data. Other QC activities, such as planning the QC program and auditing ongoing and
44 completed activities, verify that the specified methods are followed and that the QA information needed

1 for characterizing error is obtained. To illustrate that waste testing has been performed according to
2 requirements of this waste analysis plan, activities include:

- 3 • Field inspections—performed and documented by waste management staff at the generating
4 location. The inspections primarily are visual examinations but might include measurements of
5 materials and equipment used, techniques employed, and the final products. The purpose of these
6 inspections is to confirm the sufficiency and reliability of the knowledge used for the waste
7 profile.
- 8 • Field-testing—performed onsite by the 325 HWTUs staff (or designee) according to specified
9 procedures or protocol identified by the manufacturer’s instructions supplied in the field test kits.
- 10 • Laboratory analyses—performed by onsite or offsite laboratories on samples of waste. The
11 purpose of the laboratory analyses is to determine constituents or characteristics present and the
12 concentration or level.

13 The 325 HWTUs will assess analytical data used for decision making according to the following quality
14 standards, as appropriate for the data considered:

- 15 • Precision: Agreement between the collected samples/duplicates for the same parameters, at the
16 same location, subjected to the same preparation and analytical techniques. Analytical precision
17 also includes agreement among individual test portions taken from the same sample.
- 18 • Accuracy: Agreement between the observed data and the result of QA samples (e.g. certified
19 standards, in-house standards, and performance evaluation samples).
- 20 • Representativeness: The degree to which the data accurately represent the waste stream. Criteria
21 evaluated include number and adequacy of sampling locations, use of appropriate sampling and
22 analytical methods, and documentation of environmental conditions at time of sampling.
- 23 • Completeness: Amount of data obtained versus amount requested.
- 24 • Comparability: Ability to compare one data set to another. Usually addressed by evaluating
25 proper use of standard methods prescribed in this WAP.

26 These practices verify that all data and the decisions based on that data are technically sound, statistically
27 valid, and properly documented.

28 The primary purpose of waste testing is to confirm the waste is acceptable for treatment or storage at the
29 325 HWTUs in compliance with the requirements of this WAP. Waste testing also is performed to verify
30 the safe management of waste being stored and control of the acceptance of waste for storage. The
31 specific objectives of the waste-sampling and analysis program at the 325 HWTUs are as follows:

- 32 • Identify the presence of waste that is incompatible with waste currently stored.
- 33 • Provide a detailed chemical and physical analysis of the waste before the waste is accepted at the
34 325 HWTUs to ensure proper management and disposal.
- 35 • Provide an analysis that is accurate and up-to-date.
- 36 • Ensure safe management of waste undergoing storage at the 325 HWTUs.
- 37 • Demonstrate compliance with applicable LDR treatment standards, for waste treated at the
38 325 HWTUs.
- 39 • Identify and reject waste that does not meet the 325 HWTUs acceptance requirements
40 (e.g., incomplete information).

41 **B.5.3 Laboratory Quality Assurance/Quality Control**

42 All analytical work performed by independent laboratories, is defined, and controlled by a Statement of
43 Work, prepared in accordance with administrative procedures and requirements of this WAP. The daily
44 quality of analytical data generated in the analytical laboratories will be controlled by the implementation
45 of an analytical laboratory QA plan. At a minimum, the plan will document the following:

- 1 • Sample custody and management practices
- 2 • Requirements for sample preparation and analytical procedures
- 3 • Instrument maintenance and calibration requirements
- 4 • Internal QA/QC measures, including the use of method blanks
- 5 • Required sample preservation protocols following receipt of samples at the laboratory
- 6 • Analysis capabilities

7 The types of internal quality-control checks are as follows and are used as specified in the analytical
8 laboratory's program as described in Section B.5.1:

- 9 • Method Blanks—Method blanks usually consist of laboratory reagent-grade water treated in the
10 same manner as the sample (i.e., digested, extracted, distilled) that is analyzed and reported as a
11 standard sample would be reported.
- 12 • Method Blank Spike—A method blank spike is a sample of laboratory reagent-grade water
13 fortified (spiked) with the analytes of interest, which is prepared and analyzed with the associated
14 sample batch.
- 15 • Laboratory Control Sample—A QC sample introduced into a process to monitor the performance
16 of the system.
- 17 • Matrix Spikes—An aliquot of sample spiked with a known concentration of target analyte(s). The
18 spiking occurs prior to sample preparation and analysis.
- 19 • Laboratory Duplicate Samples—Duplicate samples are obtained by splitting a field sample into
20 two separate aliquots and performing two separate analyses on the aliquots. The analyses of
21 laboratory duplicates monitor the precision of the analytical method for the sample matrix;
22 however, the analyses might be affected by nonhomogeneity of the sample, in particular, by
23 nonaqueous samples. Duplicates are performed only in association with selected protocols.
24 Duplicates are performed only in association with selected protocols. Laboratory duplicates are
25 performed on 5 percent of the samples (1 in 20) or one per batch of samples. If the precision
26 value exceeds the control limit, then the sample set must be reanalyzed for the parameter in
27 question.
- 28 • Known QC Check Sample—This is a reference QC sample as denoted by [SW-846](#) of known
29 concentration, obtained from the EPA, the National Institute of Standards and Technology, or an
30 EPA-approved commercial source. This QC sample is taken to check the accuracy of an
31 analytical procedure. The QC sample is particularly applicable when a minor revision or
32 adjustment has been made to an analytical procedure or instrument. The results of a QC-check
33 standard analysis are compared with the true values, and the percent recovery of the check sample
34 is calculated.

35 PNNL Analytical Chemistry Laboratory QA/QC

36 PNNL's analytical chemistry laboratory may need to be used to analyze samples of potentially radioactive
37 dangerous waste. It has a rigorous QA plan that verifies that data produced are defensible, scientifically
38 valid, and of known precision and accuracy, and meets the requirements of its clients.

39 **B.5.4 Data Assessment**

40 Analytical data will be communicated clearly and documented to verify that laboratory data-quality
41 objectives are achieved.

- 42 • The acquired data need to be scientifically sound, of known quality, and thoroughly documented.
43 The DQOs for the data assessment are given in Section B.5.2.

1 **B.6 Selecting Waste Re-Evaluation Frequencies**

2 **B.6.1 Periodic Re-Evaluation**

3 Periodic re-evaluation is an evaluation of a waste stream that provides verification that the results from
4 the initial verification are still valid. Periodic re-evaluation of a waste stream also checks for changes in
5 the waste stream. Most waste stream containers are individually profiled, and hence subject to both
6 physical and chemical analysis as described in Section B.2.2.1 and B.2.2.2 of this WAP, each time they
7 are received at the 325 Hazardous Waste Treatment Units. Any waste stream received by the 325
8 Hazardous Waste Treatment Units not re-profiled each time containers of that waste stream are submitted
9 (i.e. *standing profiles*) will be re-evaluated at least annually.

10 **B.6.2 Re-Evaluation for Cause**

11 Re-evaluation of a waste stream under a *standing profile* will also be required if any of the following
12 occur:

- 13 • The 325 Hazardous Waste Treatment Units personnel have reason to suspect a change in the
14 waste, based on inconsistencies in packaging, labeling, or visual inspection of the waste.
- 15 • The information submitted previously does not match the characteristics of the waste submitted
16 as identified through fingerprint testing.
- 17 • The process generating the waste changes

18 **B.7 Special Waste Analysis Procedural Requirements**

19 **B.7.1 Procedures for Receiving Onsite and Offsite Waste**

20 Most of the waste stored at the 325 Hazardous Waste Treatment Units is generated on the Hanford Site
21 and/or by PNNL research programs within the 300 Area. Additional requirements for waste generated off
22 the Hanford Site include proper manifesting (if required) to the 325 Hazardous Waste Treatment Units
23 and proper packaging for transport over public roadways. Offsite waste is subject to more stringent
24 chemical verification (Section B.2.2.2.2). Although PNNL waste generated outside of the 300 Area is
25 considered to be generated offsite since it may be transported to the 325 Hazardous Waste Treatment
26 Units on roads accessible to the public, it is under the same administrative controls as wastes that are
27 generated onsite (i.e., in the 300 Area).

28 The procedures for receiving waste at the 325 Hazardous Waste Treatment Units are given in Section B.2.

29 **B.7.2 Provisions for Complying with Land Disposal Restriction Requirements**

30 The *Dangerous Waste Regulations* prohibit the land disposal of certain types of wastes. Most of the
31 waste types stored at the 325 Hazardous Waste Treatment Units falls within the purview of these land-
32 disposal restrictions (LDRs). Occasionally, treatment takes place that is intended to meet the applicable
33 LDRs for a stored waste. Information presented below describes how generators and the 325 Hazardous
34 Waste Treatment Units personnel characterize, document, and certify waste subject to LDR requirements.

35 **B.7.2.1 Waste Treatment**

36 Permitted waste treatment occurs at the 325 Hazardous Waste Treatment Units. Waste received may or
37 may not meet the applicable LDR treatment standards determined during the acceptance process
38 (Section B.2). Waste received for storage that does not meet the applicable LDR treatment standards at
39 the *point of generation* will receive treatment at the 325 Hazardous Waste Treatment Units, and/or by
40 offsite facilities.

41 Shipments of waste shall not be accepted from any non-PNNL generator without any required LDR
42 certification accompanying each shipment. For waste received from non-PNNL generators, the
43 325 Hazardous Waste Treatment Units shall receive the information required by [WAC 173-303-140](#)
44 regarding LDR wastes. The generator must sign the LDR certification.

1 The types and quantities of waste treated at the 325 Hazardous Waste Treatment Units are described in
2 Addendum A. When these treatments are performed to meet applicable LDR treatment standards, the
3 requirements of this section apply.

4 Since treatments conducted at the 325 Hazardous Waste Treatment Units are generally conducted as small
5 bench-scale operations (except for stabilization in larger containers and in-tank treatments), trace
6 contaminants in wastes are usually not a threat to the safety or conduct of these treatments. However,
7 before accepting waste for treatment via thermal treatment (T11-T18) or biological treatment (T67-T77)
8 technologies given in [WAC 173-303-380\(2\)\(d\)](#), 325 HWTUs staff will review, and amend if necessary,
9 this WAP to include any additional data needs expected to be triggered by those technologies and the
10 need to demonstrate compliance with applicable LDR treatment standards.

11 **B.7.2.2 Sampling and Analytical Methods**

12 Testing of treated waste will be performed as provided in [40 CFR 268.7\(b\)](#) according to the treatment
13 standards of [40 CFR 268.40](#) (adopted by reference at [WAC 173-303-140](#)). Sampling methods for treated
14 wastes will be chosen from the methods given in Section B.4 appropriate to the treated waste. Analytical
15 methods used for confirmation that the specified treatment standard(s) of [40 CFR 268.40](#) (incorporated by
16 reference at [WAC 173-303-140](#)) and any applicable state-specific LDRs will be selected from those
17 specified in [WAC 173-303-110\(3\)](#) as appropriate for the treated waste being analyzed.

18 Since most wastes are submitted as individual waste streams, sampling and analysis of treated waste is
19 performed on each batch as specified in [40 CFR 268.40\(b\)](#), adopted by reference at [WAC 173-303-140](#).

20 **B.7.2.3 Land Disposal Restriction Certification of Treatment**

21 Permitted waste treatment occurs at the 325 Hazardous Waste Treatment Units. Certification of treatment
22 related to waste treated at the 325 Hazardous Waste Treatment Units is managed in accordance with the
23 recordkeeping process described in Section B.8.

24 **B.8 Recordkeeping**

25 Records associated with the waste-analysis plan and waste-verification program are maintained by the
26 waste-management organization and are placed in the Hanford Facility Operating Record, 325 HWTUs
27 File. A copy of the profile for each waste stream accepted at the 325 Hazardous Waste Treatment Units
28 shall be placed in the Hanford Facility Operating Record, 325 HWTUs File. Organizational units
29 associated with generator activities maintain their sampling and analysis records. The waste analysis plan
30 shall be revised through the permit modification process whenever regulation changes affect the waste
31 analysis plan.

32 The 325 Hazardous Waste Treatment Units has and will continue to receive and store restricted or
33 prohibited waste. Because the 325 Hazardous Waste Treatment Units personnel verify designations and
34 characterization, including LDR determinations, qualified staff for PNNL-generated waste prepare all
35 notifications and certifications, as required by [40 CFR 268](#), incorporated by reference by
36 [WAC 173-303-140](#). The 325 Hazardous Waste Treatment Units staff collects information from
37 generators via the waste profile to assure that applicable LDR treatment standards have been properly
38 identified, as well as any information documenting compliance with applicable LDR treatment standards.
39 The notifications and certifications are submitted to onsite and offsite TSD units during the waste-
40 shipment process. Additionally, any necessary LDR treatment variance requests are prepared by PNNL
41 qualified staff for U.S. DOE submittal to Ecology for approval.

42 The 325 Hazardous Waste Treatment Units staff requires applicable LDR information/notifications from
43 non-PNNL generators.

44 Where a restricted or prohibited waste does not meet the applicable treatment standards set forth in
45 [40 CFR 268](#), Subpart D, the 325 Hazardous Waste Treatment Units provides to the onsite dangerous
46 waste management unit or offsite TSD facility a written notice that includes the information required by
47 [40 CFR 268.7](#).

1 In instances where the 325 HWTUs staff determines that a restricted waste is being managed that can be
2 land-disposed without further treatment, the 325 HWTUs staff submits a written notice and certification
3 to the onsite dangerous waste management unit or offsite TSD facility where the waste is being shipped,
4 stating that the waste meets applicable treatment standards set forth in [40 CFR 268](#), Subpart D,
5 incorporated by reference by [WAC 173-303-140](#), and includes the information required by [40 CFR 268.7](#).

6 The certification accompanying any of the notices previously described is signed by an authorized
7 representative of the generator and states the following:

8 *I certify under penalty of law that I personally have examined and am familiar with the waste through*
9 *analysis and testing or through knowledge of the waste to support this certification that the waste*
10 *complies with the treatment standards specified in [40 CFR 268](#), Subpart D and all applicable*
11 *prohibitions set forth in [40 CFR 268.32](#) or RCRA Section 3004(d). I believe that the information I*
12 *submitted is true, accurate, and complete. I am aware that there are significant penalties for*
13 *submitting a false certification, including the possibility of a fine and imprisonment.*

14 Certifications and notifications of treatment are prepared and submitted in accordance with the applicable
15 requirements of [40 CFR 268.7\(b\)](#), incorporated by reference by [WAC 173-303-140](#).

16 Copies of all notices and certifications described are placed in the Hanford Facility Operating Record, 325
17 HWTUs File and retained in accordance with the requirements of the Hanford Facility RCRA Permit
18 general conditions for recordkeeping.

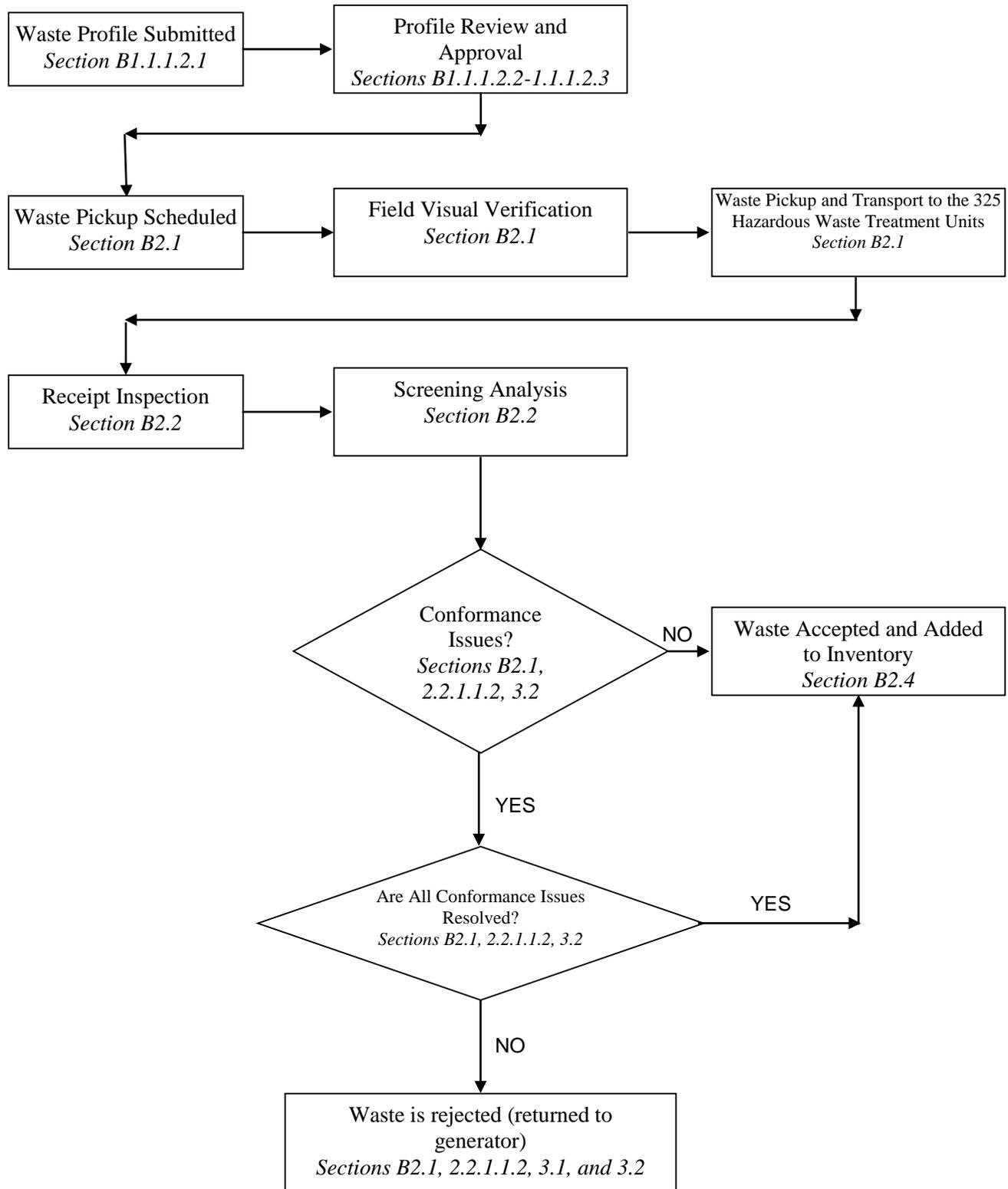
19 **B.9 References**

20 U.S. Environmental Protection Agency. 1994. *Waste Analysis At Facilities That Generate, Treat, Store,*
21 *And Dispose of Hazardous Waste: A Guidance Manual*. OSWER 9938.4-03, Washington, DC.

22 Washington Administrative Code. 2009. *Dangerous Waste Regulations*. [WAC 173-303](#), Olympia, WA.

23 Washington Department of Ecology. 2008. *Hanford Facility Resource Conservation and Recovery Act*
24 *Permit*, Revision 8, as amended.

25



1 **Figure B.1. Waste Confirmation and Acceptance Process for the 325 Hazardous Waste**
2 **Treatment Units**

1

Table B.1. Waste Compatibility Chart

Class or Division ¹		Notes	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PGI Zone A	7	8 Liquids Only	
Explosives	1.1 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.4		*	*	*	*	*	O		O	O	O		O				O		O	
Very insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6		*	*	*	*	*														
Flammable gases	2.1		X	X	O	X				X	O							O		O	
Non-toxic, non-flammable gases	2.2		X			X															
Poisonous gas Zone A	2.3		X	X	O	X		X				X	X	X	X	X	X				X
Poisonous gas Zone B	2.3		X	X	O	X		O				O	O	O	O	O	O				O
Flammable liquids	3		X	X	O	X				X	O						O		X		
Flammable solids	4.1		X			X				X	O								X		O
Spontaneously combustible materials	4.2		X	X	O	X				X	O								X		X
Dangerous when wet materials	4.3		X	X		X				X	O								X		O
Oxidizers	5.1	A	X	X		X				X	O	O							X		O
Organic peroxides	5.2		X	X						X	O								X		O
Poisonous liquids PG I Zone A	6.1		X	X	O	X		O				X	X	X	X	X	X				X
Radioactive materials	7		X			X		O													
Corrosive liquids	8		X	X	O	X				X	O		O	X	O	O	O		X		

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(Key on following page)

¹ For definition of these hazard classes, refer to [49 CFR 173.2](#).

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Table B.1 Key

Notation	Description
(blank)	No incompatibility restrictions apply; materials may be stored together. Also true for any hazard class not shown (e.g. state-only dangerous waste)
X	Materials may not be stored together in the same cell; separate secondary containment is required.
O	Materials may not be stored together in the same secondary containment, but may be stored in the same cell if necessary, provided individual secondary containment devices are provided.
*	Explosives compatibility is described in 49 CFR 174.81(f) (refer to Table given there)
A	Notwithstanding the 'X' in the table, ammonium nitrate fertilizer may be stored with Division 1.1 or 1.5 materials if necessary.

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Source: [49 CFR 174.81](#)

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Table B.2. Summary of Test Parameters, Rationales, and Methods

Parameter ^(a)	Method ^(b)	Rationale for Selection
Physical Screening		
Visual inspection	Field method—observe phases, presence of solids in waste	Confirm that waste matches that described on waste acceptance documentation; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Chemical Screening		
Water miscibility/separable organics (c)	Water solubility Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; identify separable organics; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Oxidizer	Oxidizer Screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
pH	pH screen SW-846 Method 9040, 9041, or 9045	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Cyanides	Cyanide screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Sulfides	Sulfide screen Hazcat © test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b)
Halogenated/Volatile Organic Compounds	Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©	Confirm that waste matches that described on waste acceptance documentation
Pre-Shipment Review		
Mercury (total)	Generator knowledge or SW-846 Method 7470/7471	Identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Toxicity characteristic organic compounds (d)	Generator knowledge or SW-846 Methods 1311 and 8260 (volatile organic compounds) and 8270 (semi volatile organic compounds)	Identify waste not identified in Addendum A, Part A Form
Polycyclic aromatic hydrocarbons	Generator knowledge or SW-846 Method 8270 or 8100	Identify waste not identified in Addendum A, Part A Form, (for waste with >1% solids and for which WP03 could apply)

- (a) Addition parameters can be used on current waste acceptance criteria of the downstream TSD unit. Operation limits transfer/shipments are based on current waste acceptance criteria.
- (b) Procedures based on EPA [SW-846](#), unless otherwise noted. When regulations require a specific method, the method shall be followed.
- (c) These tests will not be performed on materials known to be organic peroxides, ether, and/or water reactive compounds.
- (d) This test is only performed on waste to be stored in tank TK-1 in addition to any other appropriate chemical screening.

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