ADDENDUM B

WASTE ANALYSIS PLAN

This page intentionally left blank.

ADDENDUM B

WASTE ANALYSIS PLAN

Contents

Figures and Tables

ACRONYMS

ALARA	as low as reasonably achievable
AOAC	Association of Official Analytical Chemists
APHA	American Public Health Association
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
CAP	corrective action plan
CCW	constituent concentrations in waste
CCWE	constituent concentrations in waste extract
COLIWASA	composite liquid waste sampler
CFR	Code of Federal Regulations
CWC	Central Waste Complex
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objectives
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HNF	Hanford Nuclear Facility (document identifier)
LDR	land disposal restriction
LLBG	Low-Level Burial Grounds Trenches 31 and 34
MSDS	material safety data sheet
NDA	nondestructive assay
NDE	nondestructive examination
NIOSH	National Institute for Occupational Safety and Health
PCB	polychlorinated biphenyl
PES	performance evaluation system
pH	negative logarithm of the hydrogen-ion concentration
PPE	personal protective equipment
QA	quality assurance
QC	quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	Revised Code of Washington
SAP	sampling and analysis plan
SEPA	State Environmental Policy Act
SWOC	Solid Waste Operations Complex
T-Plant	T-Plant Complex
TCLP	toxicity characteristic leaching procedure
TPA or Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSCA	*Toxic Substances Control Act of 1976*
TSD	treatment, storage, and/or disposal
UHC	underlying hazardous constituents
WAC	Washington Administrative Code
WAP	waste analysis plan
WRAP	Waste Receiving and Processing Facility

WRP Waste Retrieval Project

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.03937	inches
inches	2.54	centimeters	centimeters	0.393701	inches
feet	0.3048	meters	Meters	3.28084	feet
yards	0.9144	meters	Meters	1.0936	yards
miles (statute)	1.60934	kilometers	kilometers	0.62137	miles (statute)
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.09290304	square meters	square meters	10.7639	square feet
square yards	0.8361274	square meters	square meters	1.19599	square yards
square miles	2.59	square kilometers	square kilometers	0.386102	square miles
acres	0.404687	hectares	hectares	2.47104	acres
Mass (weight)			**Mass (weight)**		
ounces (avoir)	28.34952	grams	Grams	0.035274	ounces (avoir)
pounds	0.45359237	kilograms	kilograms	2.204623	pounds (avoir)
tons (short)	0.9071847	tons (metric)	tons (metric)	1.1023	tons (short)
Volume			**Volume**		
ounces (U.S., liquid)	29.57353	milliliters	milliliters	0.033814	ounces (U.S., liquid)
quarts (U.S., liquid)	0.9463529	liters	Liters	1.0567	quarts (U.S., liquid)
gallons (U.S., liquid)	3.7854	liters	Liters	0.26417	gallons (U.S., liquid)
cubic feet	0.02831685	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.7645549	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Energy			**Energy**		
kilowatt hour	3,412	British thermal unit	British thermal unit	0.000293	kilowatt hour
kilowatt	0.94782	British thermal unit per second	British thermal unit per second	1.055	kilowatt
Force/Pressure			**Force/Pressure**		
pounds (force) per square inch	6.894757	Kilopascals	kilopascals	0.14504	pounds per square inch

06/2001

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Third Ed., 1990, Professional Publications, Inc., Belmont, California.

1 **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, *compatible* means the waste will not react with or otherwise damage the container, tank, or sampling equipment so that the ability of the equipment to contain the waste is not impaired. For determination of compatibility for storage, refer to definition of *incompatible waste*.
Database	The solid waste information tracking system. A database containing profile, confirmation, storage, transfer and shipment information on each container of waste.
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 *knowledge* used must provide information necessary to manage the waste in accordance with the requirements of this chapter. [WAC 173-303-040] Note: *Knowledge* 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 *detailed physical, chemical, and/or biological analysis of a dangerous waste* provided by the waste generator in order to allow the Solid Waste Operation Complex (SWOC) TSD Units (CWC, WRAP, T-Plant, and LLBG Trenches 31 and 34) staff to perform waste analysis.
Solid Waste Operations Complex (SWOC)	A combination of treatment, storage, and disposal operating unit groups consisting of the CWC, Waste Receiving and Processing Facility (WRAP), T Plant, and Low Level Burial Grounds (LLBG) Trenches 31 & 34.
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 *laboratory analysis*, but for purposes of this document, the term *testing* is used to distinguish it from waste analysis (refer to definition of *analysis* above).
Verification	Determination that the waste in question is that waste described on the approved profile. Verification includes receipt, inspection, physical screening and chemical screening of waste.
Waste Stream	Wastes that are physically or chemically similar to each other; wastes that are generated from the same types of processes; or wastes that are of the same type, but generated at different points in the process or at different process locations.

ADDENDUM B

WASTE ANALYSIS PLAN

B.1 UNIT DESCRIPTION

T-Plant Operating Unit Group (T-Plant) is located in the 200 West Area of the Hanford Site. The primary missions of T-Plant are treatment of dangerous and mixed waste and storage of non-containerized and containerized dangerous and mixed waste. The following wastes may be managed at the T-Plant Operating Unit Group: dangerous or mixed waste that is generated from processes at the Hanford site, or waste that is specifically identified in Section II, paragraph 8 of the Settlement Agreement re: Washington v. Bodman, Civil No. 2:30-cv-05018-AAM, January 6, 2006. No other wastes may be managed at T-Plant unless authorized via a permit modification decision pursuant to Permit Condition I.C.3. Requests for Permit modifications must be accompanied by an evaluation adequate for Ecology to comply with SEPA.

Additional missions include container venting, verification sampling, treatment and repackaging of dangerous and mixed waste.

This Waste Analysis Plan (WAP) describes processes for obtaining information on the chemical, biological, and physical characteristics of the dangerous waste managed in T-Plant Operating Unit Group to meet the requirements of the Washington State Department of Ecology Dangerous Waste Regulations, Washington Administrative Code (WAC) 173-303-300, General Waste Analysis.

This Waste Analysis Plan (WAP) documents the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that the T-Plant Operating Unit Group performs on dangerous and/or mixed waste that it accepts for storage and treatment. This WAP contains information regarding the acceptance, confirmation, nondestructive examination (NDE) and nondestructive assay (NDA), repackaging, movement, and management of newly generated waste, waste transfers from other SWOC treatment, storage, and disposal (TSD) Operating Unit Groups, T-Plant generated waste and Waste Retrieval Project (WRP) waste.

For a detailed description of T-Plant refer to Addendum C, Process Information. Activities may be performed by T-Plant operating organization or its delegated representative.

B.1.1 Description of Unit Processes and Activities

T-Plant is an operating unit group and is subject to the WAC 173-303, *Dangerous Waste Regulations.* The primary missions of T-Plant are treatment and storage of non-containerized and containerized dangerous and/or mixed waste. Additional missions include: characterization of Waste Retrieval Project (WRP) retrieved waste; container venting, verification; sampling; treatment; repackaging of dangerous and/or mixed waste; and repair and preparation of equipment to be returned to service.

T-Plant consists of the following dangerous waste management units (DWMUs) where dangerous and mixed waste is treated or stored.

- 221-T Canyon Building
  - 221-T Canyon Deck
  - 221- T Cells
  - 221-T Tank System
  - 221-T Railroad Tunnel
  - 221-T Head End
- 2706-T Buildings
  - 2706-T Building
  - 2706-TA Building

    - 2706-TB Building
- 214-T Building

T-Plant consists of the following outdoor dangerous waste management units:

- 2706-T StorageYard
- 2706-T Asphalt Pad
- Dangerous and Mixed Waste Storage Modules
    - HS-030 Storage Module
    - HS-031 Storage Module
    - HS-032 Storage Module
- 211-T Cage
- 221-T R-5 Waste Storage Area
- 221-TA Storage Area
- 243-T Covered Storage Pad
- 221-T Sand Filter Storage Area
- 211-T Pad
- 221-T BY Storage Area

T-Plant personnel open, sort, treat, repackage, sample, perform physical screening and chemical screening to characterize WRP retrieved waste; and verify the characterization of containers of dangerous and/or mixed waste. Treatment of dangerous and/or mixed waste includes deactivation (neutralization, cementing, absorption, encapsulating, and controlled reaction with water), stabilization (cementing, absorption, and encapsulating), amalgamation, and volume reduction of waste.

Repackaging of waste includes the removal of prohibited items, puncturing of aerosol canisters, removal or collection of liquids, segregation sorting, and waste consolidation. Repackaging of dangerous and/or mixed waste is allowed in the 221-T Canyon Deck Building, 2706-T Building, and the 2706-TA Building. Repackaging will not be considered treatment pursuant to the definition of "treatment" in WAC 173-303-040.

These waste processes include:

- Assessment and evaluation of the waste stream information about newly generated dangerous and/or mixed waste from Hanford onsite generators including the WRP. For a description of WRP refer to Section B.2.4. This process ensures conformance with T-Plant Operating Unit Group waste acceptance criteria prior to acceptance of the waste by T-Plant.
- Receipt of waste from Hanford onsite generators and WRP.
- Completion and submittal of a waste stream data package or certification file.
- Generates new dangerous and/or mixed waste during processing.
- Management of the accepted waste for treatment and/or disposal.

B.1.1.1 Waste Acceptance, Movement, Processing, and Management

T-Plant waste tracking processes ensure that the waste received at T-Plant matches the shipping manifests or transfer documents, and that the waste is tracked through T-Plant. T-Plant maintains all the waste tracking information according to permit condition.

Hanford onsite generators and SWOC Operating Unit Groups (including WRP waste) ship waste to T-Plant according to Permit Condition II.N.

T-Plant tracks the waste through the following processes: segregation; repackaging; treatment; transfers; and/or shipping for final disposal. The waste tracking process provides a mechanism for tracking waste

using a unique container identification number (Figure B.2.). The unique number is a barcode (or equivalent) that will be recorded in an electronic data tracking system. This electronic container tracking system encompasses the acceptance, movement, processing, and management of waste.

T-Plant assigns and maintains a unique container identification number when it repackages waste in a new container. This container identification number links the hard copy and/or electronic record to the container. These records will be maintained in accordance with Section B.8., Recordkeeping. T-Plant container identification number (CIN) records contain information on the location, quantity, and physical and chemical characteristics of the waste. See Permit Condition III.9.D.1

The following Sections, and Figures B.1 and B.2, describe the process for waste acceptance and required documentation (container data and waste profile). The waste management process is described in Addendum C, Process Information.

B.1.1.2 Additional Requirements for Pre-Transfer/Shipment Review

B.1.1.2.1 Narrative Process Descriptions

Wastes are stored and/or treated at T-Plant dangerous waste management units regardless of whether or not compliance with LDR treatment standards has been met. For waste that meets the applicable LDR requirements, T-Plant operating organization maintains all the information (Section B.8.) to demonstrate how these requirements have been met (Sections B.2.1.3. and B 7.3.).

The Hanford Facility is required to test certain mixed wastes when treatment standards are expressed as concentrations to ensure that the waste or treatment residues are in compliance with applicable LDR requirements (Section B.2.1.3. and B.7.3.). Such testing will be performed according to the frequency specified in this WAP, as stated in 40 CFR 268.7(b), incorporated by reference in WAC 173-303-140.

B.1.1.2.2 Waste Acceptance Process

The waste acceptance process for T-Plant Operating Unit Group, applicable to legacy, newly generated and WRP waste consists of following activities:

Waste Stream Approval

The generator provides information concerning each waste container in a particular waste shipment which includes container data sheet and waste profile sheet. The container information will be reviewed against T-Plant waste acceptance criteria. When the container information is sufficient to fully evaluate compliance with waste acceptance criteria and meets the applicable acceptance criteria, the container is approved. In addition, the initial verification frequency for the waste stream shipment will be determined by the requirements of the performance evaluation system (PES) B.1.1.1.2.2. For a more complete description of the waste stream approval process, refer to Section B.2.1.1.

Waste Shipment/Transfer Approval

The generator provides specific data for each waste container on the container data sheet. Each container data sheet will be reviewed against the waste profile sheet and T-Plant acceptance criteria before approval for shipment or transfer. In addition, T-Plant determines when any of the containers require verification based on the verification frequency as determined by the PES. For a more complete description of the waste shipment or transfer approval process, refer to Section B.2.1.2.

Verification

All waste shipments or transfers will be subject to receipt inspection during the waste acceptance process. The percentage of the waste stream selected for physical screening and/or chemical screening will be determined in accordance with the requirements of the PES, Section B.1.1.1.2.2. Containers will be opened and verified visually or by NDE. Of those containers subjected to physical screening, a percentage will be subject to chemical screening by field and/or laboratory analysis. All information and data obtained from physical and/or chemical screening will be evaluated to confirm that the waste

matches the waste profile and container information supplied by the generator. For a more complete description of the waste verification process, see Section B.2.4.4.

B.1.1.2.3 Waste Transfers Between Solid Waste Operations Complex (SWOC) TSD Operating Unit Groups

SWOC Operating Unit Group waste transfers are necessary to support Hanford Site goals. A transfer is the movement of dangerous and/or mixed waste from one operating unit group to another (CWC, T-Plant, or WRAP). Dangerous and/or mixed waste which is LDR compliant and ready for disposal may be transferred to the LLBG Trenches 31 and 34. All transfers of waste containers are subject to receipt verification. Successful completion of waste verification is documented in compliance with the T-Plant waste acceptance criteria, in accordance with Section B.8, Recordkeeping. For waste that has not been previously accepted at SWOC Operating Unit Groups, physical screening and/or chemical screening will be completed as described in Sections B.3.1 and B.3.2. For a more complete description of the transfer process, refer to Section B.2.1.2.

B.1.1.2.3.1 Types of Knowledge

When collecting documentation on a waste stream or container, T-Plant must determine if the information provided by the generator other than obtained by direct testing meets the definition of *Knowledge in WAC 173-303-040, including Note 4: "Knowledge" may be used by itself or in combination with testing to designate a waste pursuant to WAC 173-303-070(3)(c), or to obtain a detailed chemical, physical, and/or biological analysis of waste as required in WAC 173-303-300(2).*

Knowledge requirements will be met by sampling and analysis, and/or historical data. Historical data consists of detailed information from existing waste analysis data, or information on processes similar to those that generated the waste, including but not limited to the following:

- Mass balance from a controlled process that has a specified input for a specified output.
- Material safety data sheets (MSDSs) on unused chemical products.
- Test data from a surrogate sample.
- Analytical data on the waste.
- Interview information.
- Logbooks.
- Procurement records.
- Analytical data with qualifiers
- Processes and/or methods.
- Process flow charts.
- Inventory sheets.
- Vendor information.
- Mass balance from an uncontrolled process (e.g., spill cleanup).
- Mass balance from a controlled process with variable inputs and outputs (e.g., washing/cleaning methods).

All information meeting the definition of Knowledge will be applied to designate waste, quantify constituents, and characterize the waste for its safe management to demonstrate compliance with T-Plant waste acceptance criteria and WAC 173-303.

B.1.1.2.3.2 Description of Performance Evaluation System Committee (PES)

The Performance Evaluation System Committee (PES) acts as an agent of the T-Plant operating organization and determines the initial physical screening frequency of each Hanford on-site generator's waste stream. PES will provide a periodic status report for an individual generator's performance for

waste received at T-Plant. In addition, PES will provide a mechanism for determining corrective actions, resolving waste acceptance issues, and physical screening frequency adjustments when a conformance issue is discovered. The PES does not review physical screening frequency, determine corrective actions, or resolve waste acceptance issues for WRP waste.

B.1.1.2.3.3 Initial Physical Screening Frequency Determination

The initial physical screening frequency will be determined based on the following process.

- Personnel responsible for waste receipt at T-Plant review the generator waste profile information to determine the relative potential for misdesignation or inappropriate segregation based on all relevant information, including any previous experience with the generator. Based on this review, any concerns will be identified associated with the following criteria:
  - documented waste management program
  - waste stream characterization information
  - potential for inappropriate segregation.
- Based on the identification of concerns during the review, an initial physical screening frequency will be established for the new generator's waste stream based on the following criteria:
  - Initial physical screening frequency of, at a minimum, 20 percent: No concerns identified (e.g., cleanup of contaminated soil where the soil has been well characterized and no other waste generation processes are occurring at that location)
  - Initial physical screening frequency of, at a minimum, 50 percent: Concern(s) identified in one criterion
  - Initial physical screening frequency of 100 percent: Concerns identified in two or more criteria.

B.1.1.2.3.4 Performance Evaluation

A performance evaluation will be used to trend a generator's waste acceptance performance and will be used to adjust the generator's overall physical screening frequency. This evaluation, identified as an integral part of the QA program, objectively considers the conformance issues documented during the Pre-shipment Review and Verification functions. The PES maintains processes that: (1) perform evaluations based on conformance issues identified, (2) evaluate unsatisfactory performance for corrective actions, and (3) adjust physical screening rates accordingly.

The performance evaluation will be conducted and subsequently accepted by PES, and the documentation will be maintained in accordance with B.8, Recordkeeping. Performance evaluation frequency will be based on the generator's historical performance and the waste stream involved.

B.1.1.2.3.5 Conformance Issue Resolution

Conformance issues may result in a waste container not meeting T-Plant waste acceptance criteria. A conformance issue is any discrepancy identified during the confirmation process with waste package documentation, a waste package, or a shipment. Discrepancies can be identified during pre-shipment reviews of waste streams during the verification process. Mixed waste abnormalities are identified during visual inspection upon arrival at T-Plant. When a possible conformance issue is identified, the following actions will be taken to resolve the discrepancy issue.

- The PES compiles all information concerning the possible conformance issue(s).
- The PES notifies and requests that the generator supply additional knowledge that may assist in the resolution of the concern(s). If the generator supplies information that resolves the concern(s) identified, no further action is required.
- Once PES identifies a conformance issue during verification, T-Plant personnel and the generator discuss the conformance issue and identify the appropriate corrective action to resolve the container issue. The corrective actions may include returning the container to the generator or

transferring the container to WRAP or to another offsite TSD facilityto resolve the conformance issue. When the conformance issue(s) results in a waste stream failure, the physical screening frequency for all waste streams that have the potential to exhibit a similar conformance issue from the generator will be adjusted to 100 percent until the issue(s) are adequately addressed.

- T-Plant will request the generator to provide a corrective action plan (CAP) that clearly states the reason for the failure and describes the actions required to prevent recurrence. The generator may request a reduction in verification of unaffected waste streams. This request must be accompanied by a justification that identifies why these waste stream(s) will not exhibit the same conformance issue.
- T-Plant reviews the CAP and waste stream justification for adequacy. When the CAP is considered inadequate by the T-Plant organization, the generator's screening rate cannot be dropped down to the baseline frequency until an approved CAP is in place . When the waste stream justification is adequate, T-Plant may provide an alternative frequency as denoted in Section B.1.1.1.2.6.

B.1.1.2.3.6 Process for Reducing the Physical Screening Frequency

Physical screening rate frequencies and changes to those frequencies may be applied to a specific waste stream, to a specific contractor, or to a specific offsite generator based on the circumstances surrounding the conformance issue. After T-Plant establishes or increases the initial physical screening frequency, the physical screening frequency may be reduced in accordance with the following process.

T-Plant reduces physical screening in three steps. Reduction for all steps will be based on the generator's ability to demonstrate that five containers from the waste stream in question pass verification . In addition, reduction to the baseline frequency requires that T-Plant documents an acceptable evaluation of the corrective action plan. At no time will the physical screening frequency be reduced below 5 percent (minimum allowable) for waste generated onsite or below 10 percent for offsite generators.

Step 1) Reduce frequency by up to 66 percent after five containers from the waste stream in question pass verification in one physical screening event.

Step 2) Reduce frequency established in Step 1 by up to 50 percent after five containers from the waste stream in question pass verification.

Step 3) Reduce frequency established in Step 2, to the minimum allowable after five containers from the waste stream in question pass verification. T-Plant will document the acceptable evaluation of the corrective action plan. The T-Plant operating organization documents the acceptable evaluation of the corrective action plan.

The physical screening rate reduction will be established during periodic PES evaluations, and the documentation will be maintained according to Section B.8, Recordkeeping. The percentage of the reduction will be based on the evaluation of the relative severity of the original conformance issue, the status of the corrective action plan, any interim actions taken by the generator, and the generator's historical performance for this waste stream before this reduction.

B.1.1.3 Operating Conditions

T-Plant conducts waste management operations in accordance with the design and engineering requirements of waste management structures and equipment, and with all equipment manufacturer specifications and operating processes. Before treatment and/or storage of waste, the T-Plant will have processes in place for safe management of the waste. These processes will consider actual or potential risks posed by the waste and treatment and/or storage equipment. T-Plant will conduct all waste treatment and/or storage according to these procedures and will comply with labeling, container management, and inspection requirements of WAC 173-303-630. Management of ignitable, reactive, or incompatible waste within T-Plant will be accomplished in accordance with Section B.7.2.

B.1.2 Identification and Classification of Waste

T-Plant waste management operations will be conducted in accordance with the requirements of the Permit. Before a waste is accepted into T-Plant, its properties will be evaluated to determine if the waste can be safely managed within the T-Plant Operating Unit Group. Waste storage and treatment activities in the T-Plant Operating Unit Group will comply with container management requirements described in the Permit [WAC 173-303-630]. Dangerous waste is accepted for storage and/or treatment in T-Plant except for the following waste types:

- Bulk liquid waste in tankers.
- Bulk solids in trucks or roll-off boxes.
- Shock sensitive waste.
- Class 4 oxidizer waste (International Fire Code).
- Infectious waste.

T-Plant Operating Unit Group manages the following waste types:

- Containerized liquids/free liquids.
- Pressurized gas cylinders and aerosol cans within containers.
- Munitions/explosives.
- Bulk sodium metal (to be evaluated on a case-by-case basis).
- Labpack liquids.
- Solids/debris.
- Sludges/soils.

These waste types could be classified as Waste Retrieval Project (WRP), mixed, and/or dangerous. Unless otherwise prohibited by this WAP, the waste could exhibit any or all of the following characteristics: ignitable, toxic, corrosive, or reactive. Refer to Section 7.2 regarding ignitable waste, reactive waste, or compatibility reviews.

In addition to the waste received at T-Plant for storage and/or treatment, T-Plant generates mixed and dangerous waste. This waste material consists of items such as, but not limited to, personal protective equipment (PPE), rags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, or other dangerous materials that designate as dangerous wastes when discarded. Field screening and sampling will be accomplished in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials will be stored.

Biological waste could consist of animal remains that were used for experiments.

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

T-Plant Part A identifies dangerous waste numbers, quantities, and design capacity.

Waste is designated pursuant to WAC 173-303 using manufacturer's product information, MSDS, laboratory analysis, and reference material such as *Registry of Toxic Effects of Chemical Substances* (NIOSH). Waste also is characterized in accordance with the requirements of 40 CFR 761.

Designation for Waste Types accepted and stored at T-Plant Operating Unit Group include:

Number	References
U and P numbers	WAC 173-303-9903-9904
F numbers (limited numbers refer to Part A)	WAC 173-303-9904
WPCB	WAC 173-303-9904
D001	WAC 173-303-090(5)
D002	WAC 173-303-090(6)
D003	WAC 173-303-090(7)
D004 through D043	WAC 173-303-090(8)
WT01 and WT02	WAC 173-303-100 and 104
WP01, WP02, and WP03	WAC 173-303-100 and 104
WSC2	WAC 173-303-090(6)/104

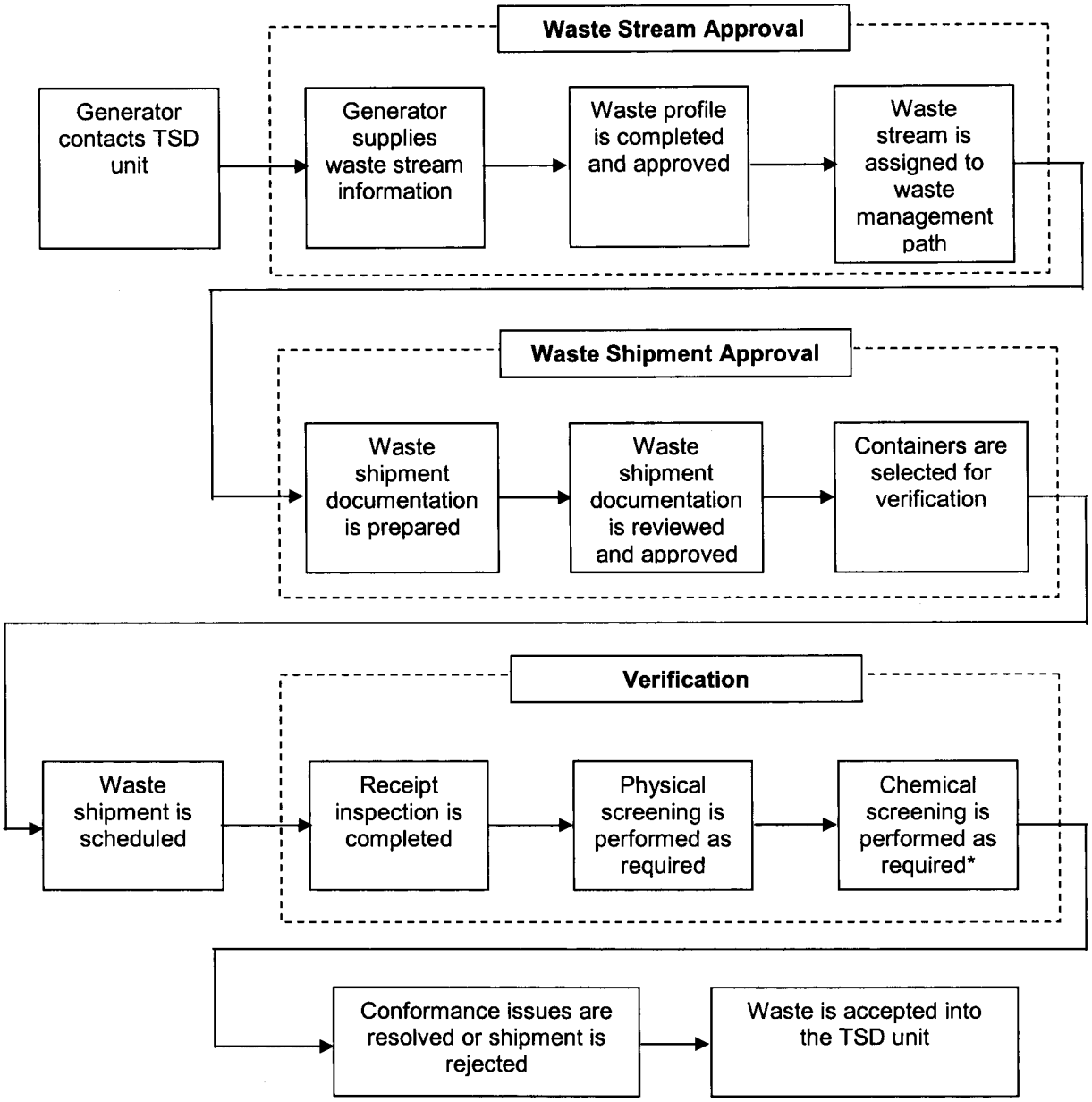

Figure B.1 Waste Confirmation and Acceptance Process

* Trained T-Plant personnel may conduct verification at the Hanford onsite generating location prior to shipment.

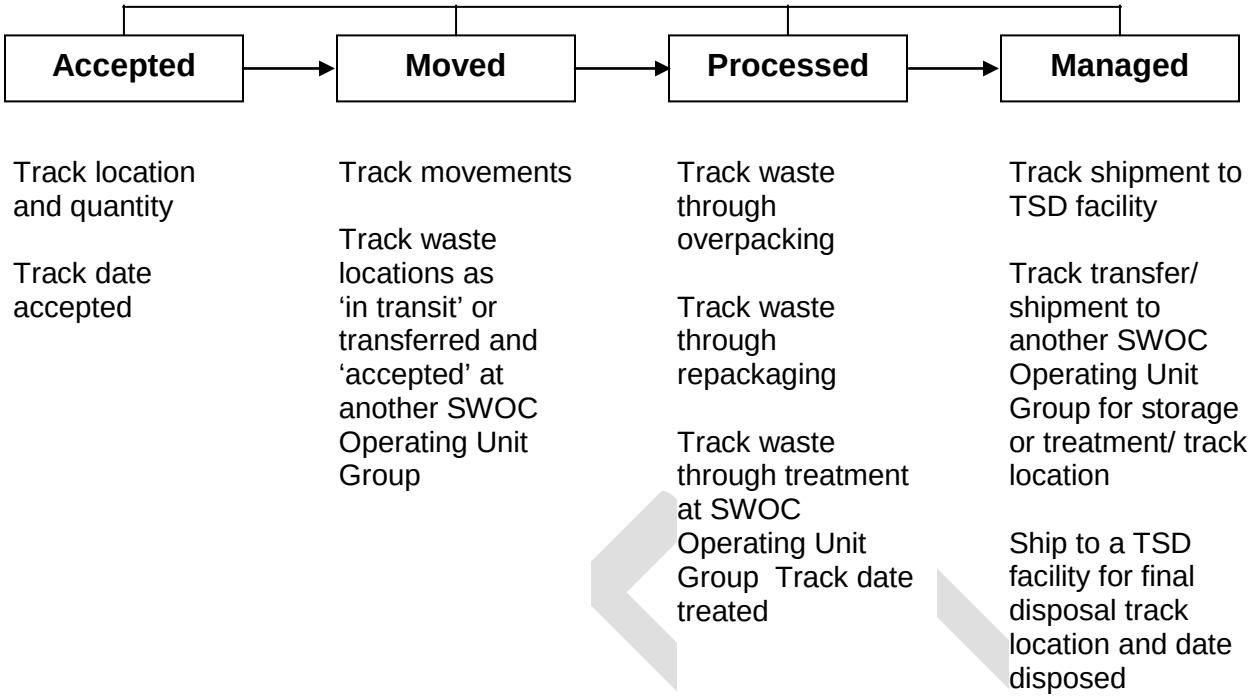

Figure B.2 Waste Tracking

B.2 CONFIRMATION PROCESS

The waste stream approval, or waste confirmation process used to meet WAC 173-303-300 requirements includes evaluating whether or not a waste stream is designated accurately and applicable LDR treatment requirements are properly documented, and whether or not the waste stream meets waste acceptance criteria for dangerous waste management units in Operating Unit Group 9 (T-Plant). The waste stream approval process ensures the waste has been appropriately characterized for purposes of designation and evaluation against T-Plant waste acceptance criteria, and that all information is of the appropriate quality for this purpose.

B.2.1 Pre-Shipment Review

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to T-Plant Operating Unit Group. The review focuses on whether the waste stream is defined accurately, meets the T-Plant waste acceptance criteria, and the LDR treatment standards (for mixed waste subject to LDR treatment standards refer to Sections B.7.3. and B.7.2.1). Only waste, determined to meet the waste acceptance criteria for storage and/or treatment within the T-Plant, will be scheduled. This determination will be based on the information provided by the generator. The pre-shipment review will consist of the waste stream approval and waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained from the generator during the pre-shipment review, will at a minimum, include all information necessary to safely store and/or treat the waste. The pre-shipment review will ensure that the waste has been characterized for purposes of evaluation against the T-Plant waste acceptance criteria.

B.2.1.1 Waste Stream Approval Process

The waste stream approval process consists of reviewing waste stream information provided on a waste stream profile and/or other approved processes and analysis authorized by this permit. At a minimum, the waste stream profile will require the following information:

- Generator information (e.g., name, address, point-of-contact, telephone number).
- Waste stream name.
- Waste generating process description.
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges).
- Designation information.
- For mixed and/or dangerous waste applicable LDR treatment standards and a determination whether the waste must be treated before land disposal including identification of constituents subject to treatment for F001-F005 and F039, and underlying hazardous constituents (UHCs) as applicable.
- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used).
- Packaging information (e.g., container type, maximum weight, size).
- Attachments may consist of container drawings, process flow information, analytical data, etc.,

This information will be reviewed against T-Plant waste acceptance criteria to ensure that the waste is acceptable for receipt. When conformance issues are found during this review, additional information will be requested. The request may include a requirement for providing analytical data or additional data derived from sample analysis. If the waste cannot be accepted, T-Plant will pursue acceptance of the waste at an alternative Operating Unit Group.

On determination that the waste is acceptable for receipt at T-Plant, the T-Plant will assign a waste management path to the waste on the basis of the waste profile and will establish a waste verification frequency based on the PES requirements.

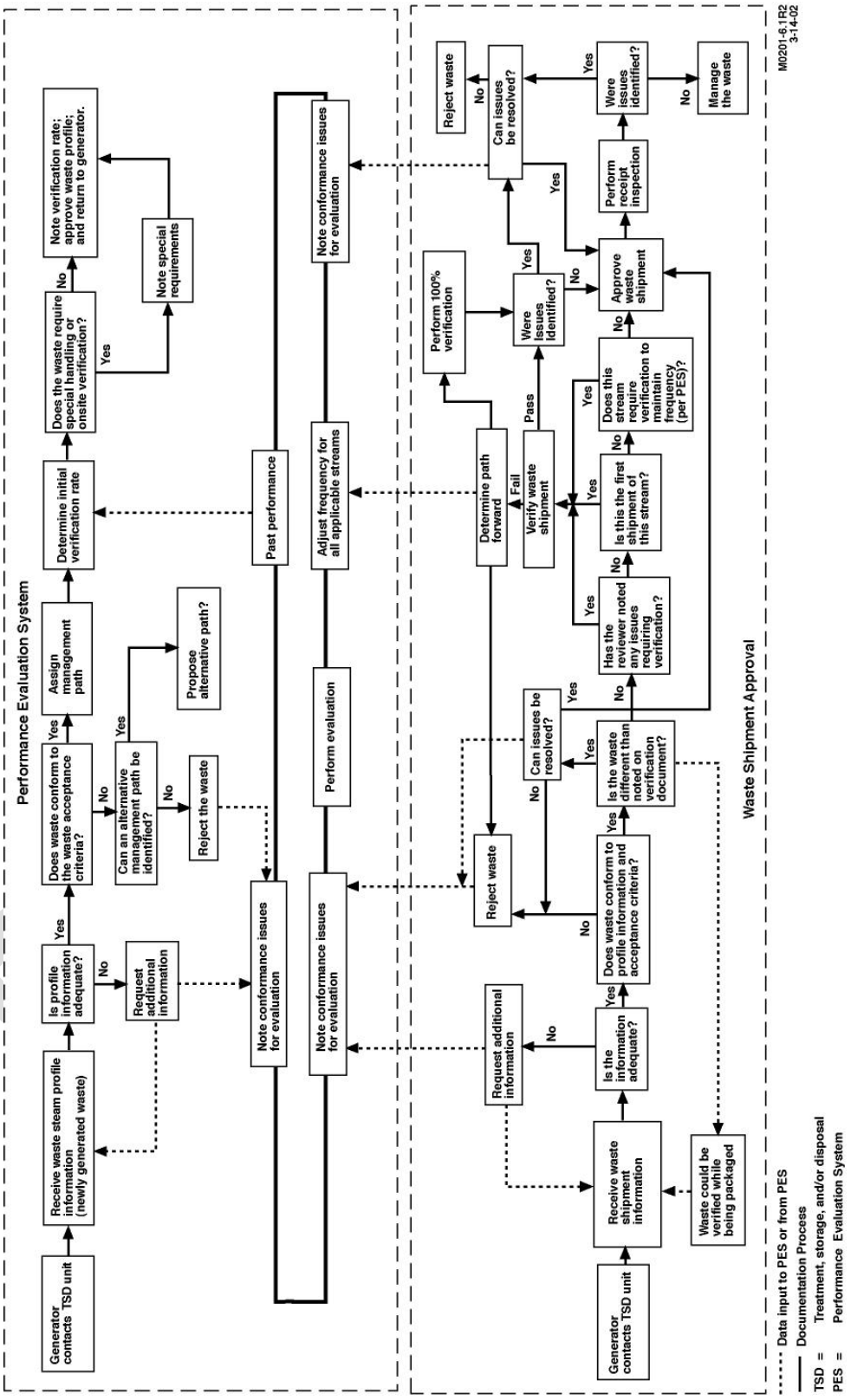

Figure B.3 Waste Acceptance Process

B.2.1.2 Waste Shipment Approval Process

For each waste transfer or shipment that is a candidate for storage and/or treatment, the generator provides the following information:

- Container identification number
- Profile number (except for waste transfers of previously accepted waste)
- Waste description
- Generator information (e.g., name, address, point-of-contact, telephone number)
- Container information (e.g., type, size, weight)
- Dangerous waste numbers
- Designation as extremely hazardous waste or dangerous waste
- Waste composition
- Packaging materials and quantities.

The pertinent information will be entered into a solid waste information tracking system database and recorded in the Operating Unit Group 9 section of the facility operating record according to the requirement of Permit Condition III.9.D.1.

When potential conformance issues exist in the information provided, (e.g., waste characteristics do not match the waste profile information, conform to the T-Plant waste acceptance criteria, or additional constituents are expected to be present that do not appear on the documentation), T-Plant may contact the generator for resolution.

For each container, a technical review will be performed. Physical screening determination and chemical screening determination are defined in Section B.2.2.2 and B2.2.3 Technical review will be as follows:

Technical review

The individual container data will be compared to the waste profile to ensure that the waste to be shipped to T-Plant is as described by the waste profile. Every SWOC TSD unit transfer will be reviewed to ensure that the waste meets T-Plant waste acceptance criteria.

Based on the waste identification information provided, the waste designation will be reviewed to ensure compliance with waste designations per WAC 173-303-070 through -100, as well as evaluating whether the waste meets T-Plant waste acceptance criteria.

When the transfer or shipment information is found to be acceptable, T-Plant will determine when any of the waste containers will be physically and/or chemically screened. The T-Plant operating organization will document the determination of shipment or transfer of waste to meet the requirements of Section B.8, Recordkeeping of this WAP.

B.2.1.3 Knowledge Requirements

T-Plant ensures that all information used to make waste management decisions will be based on the requirements found in the following sections. Information determined to be Knowledge must meet the definition of *Knowledge cited in WAC 173-303-040 including Note 4: "Knowledge" may be used by itself or in combination with testing to designate a waste pursuant to WAC 173-303-070(3)(c), or to obtain a detailed chemical, physical, and/or biological analysis of waste as required in WAC 173-303-300(2).* Information from sampling and analysis must meet the data quality requirements for the associated waste acceptance criteria or parameter.

General Knowledge Requirements

General Knowledge requires (1) waste Knowledge requirements, (2) LDR waste Knowledge requirements, and/or (3) waste Knowledge exceptions.

(1) **General Waste Knowledge Requirements for Designation and Waste Management**. At a minimum, the generator will supply enough information for the waste to be treated and/or stored at T-Plant. The minimum level of Knowledge will consist of designation data where the constituents or knowledge of the waste's generating source (in the case of wastes potentially from listed sources) causing a dangerous waste number to be assigned are quantified, and that data addresses any T-Plant operational parameters necessary for proper management of the waste.

When historical data indicates that constituents are present which might cause the waste to be regulated, testing can be performed to ensure that the constituents do not appear in the waste above applicable regulatory levels. If the constituents are included in an input to a process and historical data supports that the constituents are not expected to be in the waste, then sampling will not be necessary. This requirement may be met through chemical screening. This testing will be required only for initial characterization of the waste stream.

When the available information does not qualify as Knowledge or is not sufficient to characterize a waste for management, the sampling and testing methods outlined in WAC 173-303-110 will be used to determine whether a waste designates as ignitable, corrosive, reactive, and/or toxic, and the sampling and testing methods will be used as applicable to determine whether the waste contains free liquids.

If the testing is performed to complete characterization after acceptance of the waste by T-Plant, then this WAP governs the sampling and testing requirements.

(2) **Waste Knowledge Requirements for LDR Compliance.** Waste is stored at T-Plant while awaiting analytical results for LDR requirements. The Hanford Facility Operating Record, T-Plant file will contain all the information required to document that the appropriate treatment standards have been met or the treatment required to meet the LDR treatment standards is identified, unless otherwise specified in this section of the WAP.

For wastes with a concentration-based LDR treatment standard, analysis of a representative sample will be required to demonstrate compliance with a concentration-based treatment standard (refer to Section B.4 (Selecting Sampling Processes). Corroborative testing for the sample will be accomplished in the following manner.

- Generators use onsite laboratories or other laboratories to obtain data that is used as a basis to certify that the waste meets concentration-based LDR treatment standards. For waste that must meet method based LDR treatment standards, information must be supplied on the treatment methods necessary to meet LDR requirements and comply with WAC 173-303-380(1)(j),-(k),-(n), and -(o).
- The T-Plant will use these analytical data to meet applicable requirements found in WAC 173-303-140(4).

(3) **Waste Knowledge Exceptions**. The generator will provide the information necessary to further disposition the waste (e.g., repackage; designate; segregate; sample; and analyze) when general knowledge requirements are not met. However, the T-Plant operating organization will ensure sufficient Knowledge (as defined in WAC 173-303-040) is available regarding D001, D002, D003, and incompatibility, and that operation safeguards are in place to safely process waste.

When sufficient information is not available to meet the general waste knowledge requirements for designation and waste management or waste knowledge requirements for LDR Compliance requirements, the waste can be accepted and will enter the discrepant container management process described in Section B.2.6 in order to obtain the necessary information according to requirements of this Waste Analysis Plan.

Methodology to Ensure Compliance with Land Disposal Restrictions Requirements for Mixed and Dangerous Waste

Dangerous and/or mixed waste deficient in meeting LDR treatment standards, but meeting the waste acceptance criteria for T-Plant dangerous waste management units, may be stored and/or treated at the previously identified dangerous waste management units in T-Plant Operating Unit Group (Section B.1.1.1.1.). The following are general requirements for offsite notifications or on site information and supporting documentation:

- The waste is subject to LDR treatment standards and the generator has treated the waste. The generator will supply the appropriate LDR certification information [40 CFR 268, incorporated by reference into WAC 173-303-140].
- The waste is subject to LDR treatment standards and the generator has determined that the waste meets the LDR for disposal. The generator will develop the certification based on process knowledge and/or analytical data and will supply the appropriate LDR certification information necessary to demonstrate compliance with the LDR treatment standards of WAC 173-303-140. State-only LDRs do not require this type of certification.
- The waste is subject to LDR and requires further treatment to meet applicable treatment standard.
  - The generator will supply additional information concerning the waste and will detail any treatment necessary to meet applicable treatment standards.
  - If waste is treated to meet state-only or federal LDRs at T-Plant, T-Plant operating organization will prepare information necessary to meet WAC 173-303-380(1)(k) (Section B.7.3).

A representative sample of the waste must be submitted for analysis to ensure that concentration-based LDR treatment standards are met. This sample will be taken by the T-Plant operating organization or the generator according to the requirements of this WAP and will be required to comply with the treatment standards described in 40 CFR 268.40 and 268.48 for UHCs.

B.2.1.4 Additional Requirements for Tank System Pre-Transfer/Shipment Review

Additions to the 2706-T Building Tank System will be evaluated by T-Plant using technical assessments, sampling, and characterization to ensure chemical compatibility, and that the waste acceptance criteria for the tank system will be satisfied.

B.2.1.5 Containment Building Waste Acceptance Requirements

T-Plant containment building is the 221-T Building that includes the Tunnel, Canyon Deck, and selected process Cells. The containment building acts as primary containment for stored waste and materials (generally equipment and debris) not in containers and not containing free liquids. T-Plant containment building is designed and operated in accordance with WAC 173-303-695, which incorporates by reference the requirement of 40 CFR 264, Subpart DD, "Containment Buildings". Waste acceptance will follow the same requirements as outlined in Section B.2.1.1 of this WAP.

B.2.2 Verification

Verification is an assessment performed by T-Plant to substantiate that the waste stream received at T-Plant is the same as represented by the analysis supplied by the generator for the pre-shipment review. Verification will be performed on waste received by the T-Plant organization. Verification includes container receipt and inspection. In addition, select containers may be subject to physical screening and chemical screening (Sections B.2.2.2. and B.2.2.3). Waste will not be accepted by T-Plant for storage and/or treatment before the required elements of verification have been completed. Documentation reviewed as part of verification activities will include the shipping manifest or onsite shipping document, container inventory documentation, a container listing report, visual verification records, screening analyses, and the waste profile.

T-Plant operating organization will conduct all waste verification activities: container receipt, inspection, physical screening, and chemical screening. Qualified personnel will be trained as required by Addendum G, T-Plant Personnel Training, and Permit Condition II.C.

All conformance issues identified during the verification process will be resolved in accordance with Section B.1.1.1.2.5., Conformance Issue Resolution.

Containers previously used to hold waste that is not acute hazardous waste as defined by WAC 173-303-040 will be evaluated to determine if they are empty by using the following criteria: A container or inner liner is "empty" when all wastes in it have been taken out that can be removed using practices commonly employed to remove materials from that type of container or inner liner (e.g., pouring, pumping, aspirating, etc.) and, no more than one inch of waste remains at the bottom of the container or inner liner, or the volume of waste remaining in the container or inner liner is equal to three percent or less of the container's total capacity, or, if the container's total capacity is greater than one hundred ten gallons, the volume of waste remaining in the container or inner liner is no more than 0.3 percent of the container's total capacity.

The presence of free liquids which readily separate from the solid waste portion of dangerous waste will be determined by either the paint filter test or through NDE.

B.2.2.1 Container Receipt Inspection

Container receipt inspection is a mandatory element of the verification process. One hundred percent of each shipment and transfer will be inspected at T-Plant for possible damage or leaks, complete labeling, and if present, that tamper-resistant seals are intact (Sections B.2.2.2. and B.2.2.3.). This will ensure that the shipment: (1) is received at T-Plant in good condition, (2) is the waste indicated on the transfer or shipping papers, (3) has not been opened after physical and/or chemical screening was performed, and (4) is complete. When a conformance issue exists (Section B.2.6), a case-by-case determination will be performed and corrective action will be taken. One of the following actions may be taken as appropriate, in response to a conformance issue:

- Implementation of the Addendum J, Contingency Plan.
- Resolution of, conformance issues where additional information is needed to safely manage the waste.
- Continuation of verification for waste with conformance issues not meeting all of the above criteria.

B.2.2.1.1 Physical Screening and Chemical Screening Determination

Procedures will be maintained at T-Plant describing the activities for selecting containers for physical and chemical screening. Means of selecting containers for physical and chemical screening will be applied based on the pre-shipment and/or waste stream review process. The container selection will be based on the contents listed in the associated shipment/waste stream documentation and historical documentation.

Two criteria will be used in making the selection. The first criterion is based on whether pre-shipment review activities (document and characterization review) identify areas of potential concern. The second criterion is reviewing the current physical screening percentage (calculated according to Section B.2.2.2.3.) of containers offered for acceptance from said waste stream from said generator that have been offered over the past 12 months or the date of the last physical screening adjustment, whichever is most recent. The rate will be applied as compared to those that have been physically screened. This criterion ensures that the minimum physical screening rates required by this WAP are met.

The number of containers selected for physical screening per waste stream is determined by comparing the calculated percentage rate which is then adjusted according to the PES. This selected group of containers constitutes a sample set.

After the required percentage verification on the shipment has been completed, the container(s) is scheduled for shipment.

B.2.2.2 Physical Screening Process

Physical screening is a verification element. This section describes the requirement pertaining to methods, frequency, and exceptions concerning the use of physical screening as a verification element. Physical screening could be performed before the waste is shipped to T-Plant. When physical screening is performed at a location not within the SWOC Operating Unit Groups, tamper-resistant seals will be applied to each container after examination. Upon receipt at T-Plant, tamper-resistant seals will be verified as intact to ensure that no changes have occurred to the waste content during shipment to T-Plant. Documentation of physical screening will be maintained in accordance with Section B.8., Recordkeeping.

B.2.2.2.1 Physical Screening Methods

The following physical screening methods, comply with the requirement to verify a waste.

1. Visual inspection (opening the container)
2. NDE.

Refer to Section B.2.2.5.1 for QC pertaining to physical screening. (Refer to Section B.3.1. for the criteria and rationale for choosing a physical screening method.)

Waste packaging that is witnessed by T-Plant personnel or its representative at a non-SWOC Operating Unit Groups is considered to have met the physical screening requirements denoted in this WAP, provided that the packaging meets the requirements of WAC 173-303 and that the witness is qualified and trained to determine that the waste meets T-Plant waste acceptance criteria. On closure of the container, tamper-resistant seals must be applied to ensure the integrity of the contents. Procedures will be maintained by T-Plant detailing the requirements for adding and/or removing tamper-resistant seals.

B.2.2.2.1.1 Physical Screening Frequency

The minimum physical screening frequency is 5 percent for onsite generators, applied per waste stream per generator per year. For offsite generators, the minimum physical screening frequency is 10 percent per waste stream per generator per year. T-Plant will adjust the physical screening frequency for generators based on objective performance criteria (refer to Section B.3.1).

If a container fails verification, the waste stream physical screening frequency will be raised to 100 percent for the next containers offered. Subsequent containers offered will be evaluated through the PES for verification rates, as described in Section B.1.1.1.2.4.

B.2.2.2.1.2 Physical Screening Exceptions

The following are exceptions to the physical screening process outlined previously.

- Shielded, classified, and remote-handled mixed waste are not required to be physically screened; however, T-Plant will perform a more rigorous documentation review and will obtain the raw data used to characterize the waste (less than 1 percent of current waste receipts). For classified waste, it is necessary to have an appropriate U.S. Department of Energy security clearance and a need to know the information as defined by the classifying organization or agency.
- Waste that physically cannot be screened at T-Plant or an associated screening unit must be physically screened at the generator location [e.g., large components, containers that cannot be opened, for as low as reasonably achievable (ALARA) purposes, or does not fit into a NDE unit]. Physical screening at the generator location will consist of observing the packaging of the waste. If no location can be found to perform the physical screening, no screening is required.
- Waste that is packaged by a trained T-Plant -delegated representative(s) is considered to have met the physical screening requirements as denoted within this WAP.
- Waste that has been packaged and physically screened at a SWOC TSD unit.

B.2.2.3 Chemical Screening Process

Chemical screening is a verification element. This section describes methods, frequency, and exceptions for chemical screening. Chemical screening may be performed before the waste is shipped to T-Plant. When screening is performed at a location not within the SWOC Operating Unit Groups, tamper-resistant seals will be applied to each container examined and, on receipt at T-Plant, verified as acceptable to ensure that no changes could have occurred to the waste content before receipt at T-Plant. Procedures will be maintained by T-Plant detailing the requirements for adding and/or removing tamper-resistant seals. Chemical screening documentation will be maintained in accordance with Section B.8., Recordkeeping.

Unless otherwise noted, tests are qualitative, not quantitative. The objective of chemical screening is to obtain reasonable assurance that the wastes are generally consistent with the description on the container shipping documentation. The following tests will be selected depending on the waste matrix and the applicability of the method.

- pH
- Peroxide
- Oxidizer
- Water reactivity
- Halogenated Organic Carbons - HOC (chlor-n-oil/water/soil)
- Headspace
- Sulfide
- Cyanide
- Paint filter.

Refer to Section B.2.2.5.2., Chemical Screening Quality Control for QC information for chemical screening. Procedures will be maintained by T-Plant that defines the basis for selecting screening tests.

B.2.2.3.1 Chemical Screening Frequency

At a minimum, 10 percent (round up to the nearest whole number of container(s)) of the mixed or dangerous waste containers verified by physical screening must be screened chemically.

Small containers of waste (labpacks), not otherwise identified in the exceptions and packaged in accordance with WAC 173-303-161 will be screened chemically in accordance with the chemical screening frequency of the waste stream as determined by the PES team (B.1.1.1.2.2.). Inner containers will be segregated by physical appearance. At least one container from each group (or three containers if all are similar) will be screened chemically.

B.2.2.3.2 Chemical Screening Exceptions

Chemical screening is not required for the following:

- Small containers of waste in overpacked containers (labpacks) packaged in accordance with WAC 173-303-161 and not prohibited under LDR specified in WAC 173-303-140.
- Waste exempted from the physical screening requirements (Section B.2.1.5.4.).
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products).
- Chemical containing equipment removed from service, (e.g., ballasts, batteries).
- Waste containing asbestos.

- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided).
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes.
- Hazardous debris as defined in WAC 173-303-040.
- Other special cases could be exempted on a case-by-case basis with Ecology approval.

The aforementioned wastes are exempted from chemical screening and will be documented in accordance with Section B.8, Recordkeeping.

B.2.2.4 Sampling for Confirmation Screening

Sampling will be performed in accordance with WAC 173-303-110(2) to ensure that the samples are representative of the waste being sampled. A representative sample will be obtained for chemical screening. The chemical screening methods do not require any sample preservation methods because the screening tests are performed at the time and location of sampling, or as soon as possible thereafter. During the interim period, the samples will be stored in a manner that maintains chain of custody and protects the sample composition.

B.2.2.5 Quality Assurance and Quality Control for Confirmation Process

The following quality assurance (QA) and quality control (QC) elements are used by T-Plant to ensure that the confirmation activities generate the data essential to providing an indication that waste received is as described in the pre-shipping documentation. Data quality objectives have been established in accordance with TPA Action Plan Section 6.5 and have been documented and reflected in this WAP. In addition, all screening equipment requiring calibrations will be checked before use to ensure that calibration dates are current and equipment is functioning properly. This check will be documented in equipment log books. During screening activities strict compliance with applicable industrial hygiene and safety standards will be required.

B.2.2.5.1 Physical Screening Quality Control

This section describes the QC used by T-Plant to ensure that reliable data are obtained when performing physical screening methods identified in Section B.2.1.5.2., except visual inspection. Physical screening QC is used only to ensure that quality data are obtained when performing NDE. QC objectives for visual inspection will be performed by properly trained personnel through training as specified in T-Plant Addendum G, Personnel Training.

The following QC elements apply to NDE used for physical screening:

- A resolution test will be performed at the beginning of a shift. A shift ends when shutdown activities are performed. A shift can be up to 24-hours.
- A radiographer will be qualified per SNT-TC-IA, Level II certification of American Society of Nondestructive Testing training.
- Examination must cover 100 percent of the waste in the container.
- At a minimum annually, a capability demonstration will be performed on a training drum and documented in accordance with Section B.8, Recordkeeping.

B.2.2.5.2 Chemical Screening Quality Control

The following QC elements are used when performing chemical screening.

- Appropriate sample containers and equipment will be used.
  - Containers and equipment of the appropriate size that will be chemically compatible with the waste and testing reagents used.

- Reagent checks
  - Water that is reagent grade and from a documented source will be used.
  - Chemicals and test kits will be labeled so that these are traceable and documented in the Hanford Facility Operating Record, T-Plant file.
  - QC checks will be performed on each lot of test kits and associated reagents according to the test kit instructions and documented in the Hanford Facility Operating Record, T-Plant file.
  - If the QA/QC checks for a specific test kit are not within the acceptable range based on the manufacturer's instructions, the test kit will be removed from service. A new test kit will be put into service after satisfactorily passing the required QC checks.

B.2.2.5.3 Waste Acceptance

Initial acceptance of waste occurs only after the confirmation processes described in Sections B.2.1.1 and B.2.1.2 is complete. Conformance issues identified during the confirmation process will be documented and managed in accordance with Section B.1.1.1.2.5. Conformance issues that must be corrected before waste acceptance include:

- Waste does not match approved profile documentation.
- Designation, physical, and/or chemical characterization discrepancy.
- Incorrect LDR paperwork.
- Manifest Discrepancies as described in WAC 173-303-370(4)(a) [for offsite shipments unless Permit Conditions II.N can be utilized].
- Packaging discrepancy.

B.2.3 Waste Transfers between Solid Waste Operations Complex (SWOC) TSD Operating Unit Groups

Transfers from other SWOC TSD Operating Unit Groups to T-Plant may be necessary to perform verification, obtain additional knowledge to support treatment/disposal, to make the waste amenable for long-term storage, or to perform treatment. For waste that will be being transferred from other SWOC TSD Operating Unit Groups (WRAP, CWC, LLBG Trenches 31 & 34) to T-Plant, the following requirements apply. Waste transfers from LLBG Trenches 31 & 34 can occur due to verification activities prior to disposal or to LLBG Trenches 31 & 34 generated waste.

B.2.3.1 Waste Stream Approval Process

The waste stream must already have been approved using a profile as described in Section B.2.1.1. Waste Knowledge exceptions apply as described in Section B.2.1.3. The amount and type of data that exists for a given waste package can vary widely and depends on the documentation requirements in effect when the waste was previously accepted. Previously accepted waste is not re-profiled.

Sufficient information must be available or obtained to further disposition the waste. Mixed waste containers are shipped to T-Plant for packaging and/or treatment. The amount and type of data that exists for a given waste package varies widely and depends on the documentation requirements that were in effect when the waste was generated. T-Plant is required to supply specific information about the waste package contents. A technical review of the records will be performed and suspect dangerous waste items will be identified.

B.2.3.2 Waste Transfer Approval Process

A technical review of documentation associated with all containers in the shipment will be performed prior to transfer from other SWOC TSD Operating Unit Groups to T-Plant and documented in accordance with Section B.8, Recordkeeping to ensure that the waste meets the T-Plant waste acceptance criteria. When necessary, the waste management path (waste specification record) previously assigned to the waste stream will be updated and re-labeling/remarking will be completed before the transfer. Waste will be tracked through processing at T-Plant in accordance with Section B.1.1.1. When the characteristics of

the wastes change as a result of treatment or other processing, documentation of the change will be in accordance to Section B.8, Recordkeeping. As new information is obtained on the waste, the container will be managed to meet any new requirements. Updates to container data prior to transfer and subsequent processing activities will be reflected in solid waste information tracking system, documented, and maintained in accordance with B.8, Recordkeeping.

B.2.3.3 Verification

For container receipt inspection, all of the containers of each transfer are visually inspected for damage and to ensure that the waste containers are those indicated on the documentation. This activity is the means for identifying any document conformance issues or damaged containers before receipt/acceptance into T-Plant. Conformance issues identified during receipt will be managed as described in Section B.2.2.1.

Transfers from other SWOC TSD Operating Unit Groups to T-Plant are subject to physical screening, the Performance Evaluation System, and chemical screening only if the waste package has not been previously subjected to the process. If a waste package has been verified, further verification upon transfer within SWOC is not required.

After waste verification, no additional physical screening or chemical screening is required.

B.2.4 Waste Retrieval Project (WRP) Waste Transfers

Beyond what is normally contained in a WAP, the following sections contain process information provided for clarification purposes only. The Waste Retrieval Project (WRP) waste was placed in the 218-W-4B, 218-W-4C, 218-W-3A, and 218-E-12B burial grounds after May 6, 1970 up until the time transuranic (TRU) waste was stored in aboveground storage buildings. At the time it was placed in the burial grounds, the waste met the definition of TRU waste. WRP waste will be removed from the burial grounds (retrieved) and managed in accordance with the Tri-Party Agreement (TPA) M-091 series of milestones (Attachment 1 of the Hanford Facility Dangerous Waste Permit). WRP waste is presumed to be TRU mixed (TRUM) waste prior to commencing retrieval. WRP TRUM waste can be reclassified to mixed low level waste (MLLW) during the course of retrieval or subsequent storage.

CWC, WRAP, and T Plant are Operating Unit Groups that manage WRP waste. WRP TRUM waste will reevaluated for acceptance for shipment to an off-site disposal facility pursuant to the Land Withdrawal Act. WRP MLLW will be evaluated for storage and/or treatment for eventual disposal at an on-site disposal facility. Offsite permitted facilities can be used to supplement the processing/treatment of WRP TRUM waste and MLLW.

B.2.4.1 Waste Information Pre-Shipment Review

Waste knowledge must be sufficient to designate the waste in accordance with WAC-173-303-070 through -100 and to properly manage the waste. This includes sufficient information to properly segregate the waste, and to demonstrate that the waste meets acceptance criteria for subsequent on-site TSD units or offsite TSD facilities.

Waste information is summarized in acceptable knowledge (AK) packages as allowed by WAC 173-303-070(3)(c)(ii) consisting of information from burial records, waste stream descriptions including buildings and processes, and the packaging requirements applicable during the time the waste was placed into the burial grounds. The AK review includes the operational history from the waste generating areas and the processes that generated the waste.

The AK data compiled provides the basis for the waste designation. The waste designation assures the waste can be safely managed, segregated for storage, and/or transferred to an on-site TSD unit or offsite TSD facility. The AK package is documented in the operating record for CWC.

Collecting sufficient information for WRP waste presents several unique challenges. The WRP waste was generated at locations on and off the Hanford Facility. The WRP waste consists primarily of debris

with small amounts of non-debris solid waste including containerized liquids with sufficient sorbent to solidify the liquids. Packaging requirements to ensure only disposal of sorbed liquids in small amounts were in place in 1970 when WRP waste was placed into the burial grounds (December 1970, ARH-1842). For containers that may have contained liquids, sufficient absorbents were added so that liquid is retained in the absorbent and will not flow if the container is breached. A variety of materials have been used to meet this requirement including: vermiculite, diatomaceous earth, concrete, and sawdust. This information (free-flowing liquids are prevented via absorbent) is applied to the container unless new information is obtained on the container.

Container sizes of WRP waste range from 55 gallon drums to very large boxes of various sizes. Since the waste was placed in the burial grounds up to approximately 40 years ago, the containers have degraded and many of the identification markings have become unreadable, or in some cases, no markings at all were applied to the container. When the package identification number is still legible on the container, an attempt is made to identify the contents of the container from the information contained on the burial record and AK package. When the container cannot be identified, the container is termed "unidentifiable." For unidentifiable waste containers that consist of multiple sources of generating locations and processes, the AK package applies a conservative waste designation to each container.

During processing of the WRP waste, additional information is generated and is then added to the waste record. Additional information is reviewed to determine if the storage category (hazard class) should be updated, or if the container should be stored in secondary containment. Compatibility reviews are performed in accordance with Section 7.2 on the AK packages.

B.2.4.2 Waste Container Evaluation

Prior to placement in the burial grounds, a variety of containers were utilized to package WRP waste including, but not limited to: 55 gallon drums, 110 gallon containers, fiberglass reinforced plywood boxes, cleated plywood boxes, concrete boxes, and steel boxes. Prior to removal of WRP waste from the burial ground trench, burial records and subsurface scanning techniques are used to obtain data on the location of the containers. Several techniques have been used and are being used for the retrieval of these containers. Typically, the first step within the trench involves the removal of overburden and remaining soil to expose the container. Operational controls to prevent exposure to the waste are utilized throughout this process.

When the container is exposed, a visual check is performed to identify leaks, dents, bulges and degradation. Health and safety surveys and monitoring of the container and the surrounding area are performed. The container will be removed when a determination is made that this process will not result in the spread of contamination. If the condition of the container is damaged or corroded it will be mitigated. Mitigation techniques depend on the type of container, but may include: overpacking, shoring of the box, and packaging WRP waste into a new container. Protective coverings are applied to the large containers to protect the containers from ultra violet rays and weather. When the process of removing the WRP waste from the trench has been completed, the waste is packaged in a container that can be safely transported and stored in T-Plant or other receiving facility.

B.2.4.3 Pre-Transfer Review

Transfer of the WRP waste out of the burial grounds is necessary to perform subsequent processing, treatment, and/or characterization. When a transfer to CWC, WRAP, or T Plant occurs, a pre-transfer review takes place before transfer from a burial ground is scheduled and a determination is made on the ability to transfer. The pre-transfer review determination is based on the characterization of the waste (described in Sections B.2.3.1 and B.2.3.2) and information collected during the management of the WRP waste in the burial ground(s). WRP waste transfers between TSD units also occur (CWC, WRAP, T Plant) and are governed by this section.

B.2.4.4 Verification

For container receipt inspection, all of the containers will be visually inspected for damage and to ensure that the waste containers are those indicated on the documentation. This activity will be the means for identifying any document conformance issues or damaged containers before receipt/acceptance into CWC. Conformance issues identified during receipt will be managed as described in Section B.2.1.2.

Transfers of WRP waste are not subject to physical screening beyond the visual check identified in B.2.3.2, the Performance Evaluation System, and chemical screening processes.

B.2.5 T-Plant Generated Waste

T-Plant generates dangerous and/or mixed waste while processing. This waste material consists of items including, but not limited to: personal protective equipment, rags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, run-off from the T-Plant Outside Storage Areas or other dangerous materials that designate as dangerous waste when discarded. Operational Knowledge is used to characterize these waste materials for the purposes of waste designation. Waste generated by T-Plant is considered accepted at T-Plant when the waste is generated. All Knowledge and confirmation of Knowledge concerning T-Plant generated waste will be documented in accordance with Section B.8., Recordkeeping.

B.2.5.1 Waste Stream Approval Process

Documenting operational Knowledge constitutes the waste stream approval process.

B.2.5.2 Waste Transfer Approval Process

No transfer occurs while the waste resides in T-Plant. If the waste is transferred to another SWOC unit, the requirements for a SWOC transfer in Section B.2.3 apply.

B.2.5.3 Verification

Any container is exempt from verification requirements when the container resides in T-Plant. Verification requirements include the container receipt inspection, physical screening, the Performance Evaluation System, and chemical screening.

B.2.6 Discrepant Container Management

During the waste acceptance process or during subsequent management of waste at any of the T-Plant dangerous waste management units, an issue can arise in which a waste container demonstrates a discrepant condition. Such containers will be tracked as a ‘discrepant container’ until the issue is resolved. The following list of issues will be tracked under the discrepant container management program:

- Indications of bulging,
- Containers with unknown contents,
- Containers holding waste prohibited under Section 1.2,
- Containers no longer in good condition and not in compliance with WAC 173-303-630(2),
- Inconsistent inventory between container contents and the record, and
- Unexpected liquids are found.

The following process and criteria will be initiated for a discrepant container. The criteria may be modified through the permit modification process in the future to address specific waste management issues.

- An evaluation will be performed on available historical data. In addition, interviews could be performed with generator points-of-contact, NDE personnel, etc.
- Nonempty Containers as defined in WAC 173-303-160(2), in which liquids are discovered, will

be placed in secondary containment that meets the requirements of WAC 173-303-630(7)(a), except when demonstrated that liquids are completely absorbed. Containers with discovered liquids and with sufficient added absorbent to completely absorb the liquids and meet the other requirements of WAC 173-303-630(7)(c), may be managed in container storage units without secondary containment. For combination packages[1], if the liquids are only present within inner containers and no free liquids are present in the outer container, the external container will serve as secondary containment, provided that the combination package can be managed in a manner that meets the requirements of WAC 173-303-630(7)(a) and the compatibility requirements in WAC 173-303-395(1). When additional information about the waste becomes available to warrant a compatibility evaluation, an evaluation will be performed to ensure the compatibility with the other materials in the container and with the outer container in accordance with WAC 173-303-395(1)(b). This evaluation will be documented in the unit operating record in accordance with WAC 173-303-395(1)(c). Liquids not determined to be compatible with the waste contents or the container will be segregated in accordance with Addendum C, Process Information..

- If adequate information is unavailable to determine the liquids constitute an imminent hazard, the container will be segregated as incompatible waste in accordance with Addendum C, Process Information.. The contents will be considered "unknown contents" and placed as a priority for discrepancy resolution.
- For waste where the generator can be contacted, the generator will be requested to provide additional information. The container will be dispositioned by either returning it to the generator (provided it can be transported safely and compliantly) by resolving the discrepancy on the container at a SWOC Operating Unit Group, or shipping the container off-site to a permitted TSD facility.
- Based upon the evaluation of information (hazards identified) the container will be managed in a safe configuration.
- The container will be tracked for discrepancy resolution.

B.2.7 Sampling and Analysis Plans

A sampling and analysis plan (SAP) may be developed outside the WAP to support the characterization of waste for various projects. A SAP provides sufficient detail to ensure that sampling personnel and the analytical laboratory correctly implement the DQOs and quality assurance project plan requirements pursuant to TPA agreement action plan, Section 6.5. SAPs can utilize existing Knowledge, historical information and/or additional analytical data in combination with sampling requirements as identified in the SAP to sufficiently characterize a waste stream for acceptance into T-Plant Operating Unit Group. Ecology will review all SAPs and SAP revisions associated with this WAP prior to implementation.

B.3 SELECTING WASTE ANALYSIS PARAMETERS

Physical and chemical screening parameters for verification will be chosen from those in Sections B.3.1. and B.3.2. Parameters for waste designation, and meeting LDR requirements are addressed in Section B.3.3. Each physical and chemical screening result must be in agreement with the shipping documentation. Conformance issues identified during the confirmation process will be documented and managed in accordance with Section B.1.1.1.2.5. Parameters, methods, and rationale for physical and chemical screening parameters appear in Table B. 1 below.

[1] A combination package is any configuration where dangerous and/or mixed wastes are confined within (inner) containers, which are in turn stored within secondary, external (outer) containers. Examples include labpacks, certain overpacks, portable spill pallets, or any container configuration that has an outer container with one or more inner containers.

1

Table B.1 Parameters and Rationale for Physical and Chemical Screening

Parameter	Method[a]	Rationale for Selection
Physical Screening		
Visual inspection	Field method – observe phases, presence of solids in waste	Evaluate consistency between waste and shipping documentation and determine the presence of free liquids.
Nondestructive evaluation	Field method	Evaluate consistency between waste and shipping documentation and determine the presence of free liquids.
Chemical Screening		
Ignitability and/or headspace for volatile organic compound screening	Organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions.
Peroxide	Field peroxide test paper	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions..
Liquids	SW-846, Method 9095, Paint Filter Liquids Test	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions..
pH	Field pH screen (pH paper method)	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions..
Oxidizer	Field potassium iodide test paper	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions..
Water reactivity	Field water mix screen	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions..
Cyanides	Field cyanide screen	Confirm consistency between waste and shipping documentation; determine from test

Table B.1 Parameters and Rationale for Physical and Chemical Screening

Parameter	Method[a]	Rationale for Selection
		results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions.
Sulfides	Field sulfide screen	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions.
Halogenated Organic Carbons	Screening test method for PCBs in transformer oil (SW-846, Method 9079)	Confirm consistency between waste and shipping documentation; determine from test results whether the preventive measures identified in WAC 173-303-395(1)(b) must be applied to manage the waste incompliance with permit conditions.

[a] Processes based on manufacturer's recommended methodology for test kit or testing equipment, unless otherwise noted. When regulations require a specific method, the method will be followed.

B.3.1 Physical Screening Parameters

The following methods are approved for use in performing physical screening.

(1) Visual inspection (preferred method for physical screening):

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying waste stream documentation.

Method: The container will be opened and the contents are removed as needed for visual examination. Homogenous loose solids will be probed to determine the presence of material not documented on the waste stream documentation, or for improperly absorbed liquids. Visual observations will be compared with the applicable profile information and the container specific information in the waste stream documentation.

Failure criteria: A container fails inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles or materials listed in Section B.1.2; (c) discovery of material not consistent with the applicable waste stream documentation; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, and metal).

(2) NDE:

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying waste stream documentation. This method also is subject to the QA requirements listed in Section B.2.1.8. Containers that are not easily amenable to visual inspection because of physical or radiological content, or unit availability can be examined safely and economically.

Method: The container will be scanned with a NDE system. Data will be observed on a video monitor and captured and recorded. Personnel experienced with the interpretation of NDE imagery record their observations. These observations will be compared to the contents listed on the waste stream documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles listed in Section 1.2; (c) image data not consistent with the applicable waste stream

documentation; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, and metal).

B.3.2 Chemical Screening Parameters

The following methods are approved for use in performing chemical screening tests. Chemical screening will be used to verify that incoming waste is consistent with waste stream documentation. Failure of a chemical screening test is defined as a chemical screening result that is inconsistent with the associated waste stream documentation.

(1) Ignitability and/or headspace volatile organic compound screening:

Rationale: To determine the potential ignitability and the presence or absence of volatile organic compounds in waste and to alert personnel to potential hazards. These methods are used when containers are opened for inspection. These methods can be applied to any matrix.

Methods: A sample of the headspace gases in a container will be analyzed by one or more of the following types of portable instrumentation: organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter.

Failure criteria: High organic vapor readings in matrices not documented or detected as having volatile organic content or organic vapor readings below what is expected based on the waste stream documentation, constitutes failure.

(2) Peroxide screening:

Rationale: To determine the presence of organic peroxides in solvent liquid wastes, to alert personnel to potential hazards, to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the waste stream documentation. The test is sensitive to low parts per million ranges.

Method: A peroxide test strip is dampened with a pipet sample of liquid waste. Solids are tested by first wetting the test strip with water and contacting a small sample of the waste. A blue color change indicates a positive reaction. The color change can be compared with a chart on the packaging to determine an approximate organic peroxide concentration.

Failure criteria: Peroxide concentrations greater than 20 parts per million in liquid waste constituents that are known organic peroxide formers not documented as having been stabilized constitutes failure. Results that are not consistent with documented constituents fail verification.

(3) Paint filter liquids test:

Rationale: To verify the presence or absence of free liquid in solid or semisolid material.

Method: To a standard paint filter, 100 cubic centimeters or 100 grams of waste are added and allowed to settle for 5 minutes. Any liquid passing through the filter signifies failure of the test. The required method for the paint filter liquids test is method 9095 in the U.S. Environmental Protection Agency (EPA), SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (the most recently promulgated version) (EPA 1986).

Failure criteria: Failure of the test in waste matrices not documented as having free liquids constitutes failure of the container. Small quantities of condensate trapped in inner plastic liner folds are acceptable.

(4) pH screen:

Rationale: To identify the pH and corrosive nature of an aqueous or solid waste, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation.

Method: Field verification of pH measurement is performed using pH test paper.

Failure criteria: If the pH of a matrix exceeds regulatory limits (less than or equal to 2.0 or greater than or equal to 12.5) in waste not documented as being regulated for this property, or the measured pH is inconsistent with the waste container documentation, the container fails verification.

(5) Oxidizer screen:

Rationale: To determine if a waste exhibits oxidizing properties, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation. This test can be applied to waste liquids, solids, and semisolids.

Method: 1 or 2 drops of 3N HCl acid is added to the Oxidizer test paper (potassium iodide, starch). The test paper is touched to a pea size sample of the waste to be tested. A black, blue/black, or purple color change determines a positive oxidizer test.

Failure criteria: A positive indication in a waste that is not consistent with documented constituents fails verification.

(6) Water reactivity screen:

Rationale: To determine if the waste has the potential to vigorously react with water to form gases or other reaction products. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the waste stream documentation.

Method: 2 or 3 drops of distilled water is added to an oxidizer test paper strip. The test paper is touched to a pea size sample of the waste to be tested. The observance of effervescence, a violent reaction, flaming or boiling indicates a positive test.

Failure criteria: A positive or negative indication in a waste that is not consistent with documented constituents fails verification.

(7) Cyanide screen:

Rationale: To indicate if waste could release hydrogen cyanide on acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible waste and to confirm consistency with the waste stream documentation.

Method: A pea size sample of the waste to be tested is dissolved in a small quantity of water. A mixture of ferrous ammonium sulfate and ferrous ammonium citrate is added to the stoppered test tube. The sample is then shaken and 3N HCl is added to the solution. A dark Prussian blue color change indicates the presence of the acid.

Failure criteria: A positive or negative indication in a waste that is inconsistent with documented constituents fails verification.

(8) Sulfide screen:

Rationale: To indicate if the waste could release hydrogen sulfide on acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible wastes and to confirm consistency with the waste stream documentation.

Method: 5 drops of 3N HCl acid is added to a pea size sample of the waste to be tested. Lead acetate test paper is touched to the sample. A brown or black color change of paper indicates a positive test.

Failure criteria: A positive or negative indication in a waste that is inconsistent with documented constituents fails verification.

(9) Halogenated Organic Carbons screen:

Rationale: To indicate whether PCBs or other chlorinated solvents are present in the waste. This information is used to confirm consistency with the waste stream documentation and to determine if additional information/data are needed to properly store and treat the waste.

Methods: Field organic chlorine tests appropriate to the matrix, such as those offered by the Dexsil Corporation (e.g., Chlor-N-Oil, Chlor-N-Soil), are used. These screening tests are available with several detection limits that enable the verification to be performed in the concentration range applicable to the proposed management path of the waste.

Failure criteria: A positive or negative indication of chlorinated organic compounds in a waste that is inconsistent with documented constituents as having chlorinated organic compounds content constitutes failure.

B.3.3 Analysis Parameters and Methods

Parameters needed to meet designation, characterization, and LDR requirements and associated analytical methods for dangerous and/or mixed waste stored and/or treated at T-Plant Operating Unit Group are identified in Table B.2. The most recent promulgated revision of SW-846 will be used for the EPA methods.

In determining the characteristic of ignitability, either the Pensky-Martens (EPA Method 1010) or the Setaflash (EPA Method 1020), must be used when testing. The characteristic of corrosivity also requires specific EPA test methods. When testing the pH of a given waste stream, EPA Method 9040 or EPA Method 9045 must be used in accordance with WAC 173-303-090(6).

Compliance with LDR for dangerous and/or mixed waste that have a treatment standard expressed as constituent concentrations in waste (CCW) [40 CFR 268.40, incorporated by reference into WAC 173-303-140] may be shown using the appropriate method in Table B.2. When the waste treatment standard is expressed as constituent concentrations in waste extracts (CCWE) [40 CFR 268.40, incorporated by reference into WAC 173-303-140], then the Toxicity Characteristic Leaching Procedure (TCLP) EPA Method 1311, which is referenced in 40 CFR 268.41(a), must be performed. Following the extraction procedure (EPA Method 1311), the appropriate EPA determinative method in Table B.2. Both cyanide test parameters (total and amenable) for non-waste waters will be analyzed using EPA Method 9012, 9014, 9213, or SM 4500-CN [b]. Uniform Hazardous Constituents (UHCs) will be evaluated by 40 CFR 268.48.

Table B.2 Analytical Parameters, Methods, and Rationale for T-Plant

Parameter		Analytical method[a]	Matrix type	Rationale for Analysis
Flashpoint		1010, 1020	Liquid	To determine regulatory status as D001 waste, to provide proper waste designation and to identify applicable LDR treatment standards.
pH	Liquid	9040, SM 4500H^+B[b]	Liquid, sludge	To determine regulatory status as D002/WSC2 waste, to provide proper waste designation and to identify applicable LDR treatment standards.
	Solid	9045	Solid	
Free liquids		9095	Liquid, sludge, solid	Identify applicable LDR treatment standards.
Cyanide		9012, 9014, 9213, SM 4500 CN[b]	Liquid, sludge, solid	To determine regulatory status as D003 waste, to provide proper waste designation and identify applicable LDR treatment standards.
Sulfide		9030	Liquid, sludge, solid	To determine regulatory status as D003 waste, to provide proper waste designation and identify applicable LDR treatment standards.
PCBs		8082	Liquid, sludge, solid	To determine regulatory status as WPCB waste, to provide proper waste designation and identify applicable LDR treatment standards.

Table B.2 Analytical Parameters, Methods, and Rationale for T-Plant

Parameter	Analytical method[a]	Matrix type	Rationale for Analysis
Total organic carbon	9060	Liquid, sludge, solid	To provide proper waste designation and applicability to state-only requirements, and to determine if the waste is subject to LDR treatment standards.
Persistent constituents: HOC [WAC 173-303-040]	9076	Oil	To determine regulatory status as WP01/WP02 waste, to provide proper waste designation and applicability to state-only requirements.
	9020,9021,9022 8260[d]; 8270[d]	Liquid, sludge, solid	
Persistent constituents: PAH	8270 SIM		
Total suspended solids	SM 2540D[b]	Liquid, sludge	To provide applicability of LDR requirements and status as a wastewater.
Volatile organic compounds[d]	1311/8260	Liquid, sludge, solid	To determine proper waste designation, regulatory status, and applicability of LDR requirements.
Semi volatile organic compounds[d]	1311/8270	Liquid, sludge, solid	To determine proper waste designation, regulatory status, and applicability of LDR requirements.
Chlorinated herbicides	1311/8151	Liquid, sludge, solid	To determine proper waste designation, regulatory status, and applicability of LDR requirements.
Arsenic[d]	1311/6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Barium[d]	1311/6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Cadmium[d]	1311/6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Chromium[d]	1311/6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

Table B.2 Analytical Parameters, Methods, and Rationale for T-Plant

Parameter	Analytical method[a]	Matrix type	Rationale for Analysis
Lead[d]	1311/6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Mercury[d]	1311/7470, 7471, 7473, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Selenium[d]	6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Antimony[d]	6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Beryllium[d]	6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Nickel[d]	6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Thallium[d]	6010, 200.8[c]	Liquid, sludge, solid	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

[a] Procedures based on EPA SW-846, unless otherwise noted. When regulations require a specific method, the method will be followed.
[b] EPA-600/4-79/020 (EPA 1983), unless otherwise noted.
LDR = land disposal restriction.
PCB = polychlorinated biphenyls.
TSCA = *Toxic Substances Control Act of 1976*

B.4 SELECTING SAMPLING PROCESSES

Specific sampling procedures and techniques depend on both the nature of the material and the type of packaging. Waste samples are handled and preserved as necessary to protect the sample. For treatment, preservation techniques, and holding times T-Plant Operating Unit Group personnel or authorized delegate will utilize the procedures and techniques recommended in SW-846. This section describes the sampling methodology used to obtain representative samples. DQOs have been established in accordance with TPA Action Plan Section 6.5.

B.4.1 Sampling Strategies

Table B.3 contains waste forms and sample equipment used to sample the referenced waste. Sampling of these waste forms will be performed in accordance with Table B.3.

B.4.2 Sampling Methods

Samples will be processed at one of several laboratories qualified to perform analysis of waste samples (refer to Section B.5).

The basic sampling sequence includes the following:

- Obtain a unique sample number and complete the sample tag before sampling.
- Obtain a pre-cleaned sampler and sample bottles.

- Attach sample label to sample bottles.
- For sampling liquid waste, use a sampler or pipet to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle.
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative.
- Fill sample containers in the following sequence: volatile organics, semivolatile organics, metals, ignitability, pH (corrosivity).
- For solid waste, wipe the exterior surfaces of the sample bottles with a dry rag.
- Attach sample labels to outer plastic bags.
- Place samples in an appropriate receptacle for transfer to the laboratory.
- Complete the chain-of-custody records and comply with chain-of-custody procedures.
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1).
- Transfer receptacle to the analytical laboratory, as appropriate to meet sample holding times.
- Properly clean and decontaminate non-disposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

B.4.3 Selecting Sampling Equipment

Sampling equipment selection is detailed in Table B.3. Sampling equipment needed to sample waste will be maintained and decontaminated as necessary to ensure representative samples according to SW-846.

Table B.3 T-Plant Chemical Screening Sampling Equipment

Waste form	SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Test Methods, Section B.9., References	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, glass thief pipet; dip, tank bomb, and bailer samplers; and tube-type samplers
Solidified liquids	Sludges	Trier, scoops and shovels; tube-type samplers and augers; for small containers, a spoon may be used in place of a scoop
Sludges	Sludges	Trier, scoops and shovels
Soils	Sand or packed powders and granules	Auger, scoops and shovels; tube-type samplersand augers; for small containers, a spoon may be used in place of a scoop
Absorbents	Large-grained solids	Large trier, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, scoops and shovels
	Dry powders or granules	Thief, scoops and shovels
	Sand or packed powders and granules	Auger, scoops and shovels
	Large-grained solids	Large trier, scoops and shovels

	Moist powders or granules	Trier, scoops and shovels
	Dry powders or granules	Thief, scoops and shovels
Ion exchange resins	Sand or packed powders and granules	Auger, scoops and shovels

COLIWASA = composite liquid waste sampler.
* other ASTM-approved equipment could be used to collect samples.

B.4.4 Sample Preservation

Sample preservation will follow SW-846 protocol .

B.4.5 Establishing Quality Assurance and Quality Control For Sampling

This WAP incorporates the requirements of Attachment 7. Sample collectors prepare a permanent log of sampling activities in accordance with SW-846. Records are maintained in accordance with Section B.8, Recordkeeping. Log entries include: date of collection, time of collection, location, batch number, sample number, tank number (if applicable), copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature. These log entries are made by trained personnel while the sampling is performed. The logs or copies of logs are maintained in accordance with Section B.8., Recordkeeping.

Chain-of-custody records will accompany samples at all times. T-Plant Operating Unit Group will maintain and follow hard copy or electronic chain-of-custody processes to ensure accountability of waste sample handling and to guarantee sample integrity. All samples will be labeled with a unique identifier.

During all sampling activities, strict compliance with applicable industrial hygiene and safety standards is mandatory. T-Plant Operating Unit Group maintains sampling and decontamination processes to ensure that industrial hygiene and safety standards will be met.

The following QA/QC elements are used by T-Plant Operating Unit Group to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined SW-846
- Approved sample containers and sampling equipment per SW-846
- Samples numbered
- Traceable labeling system
- Field QA/QC samples (per applicable SAP)
- Documentation of equipment calibration per equipment manufacturer specifications
- Chain-of-custody records and corresponding chain-of-custody procedures.

B.5 LABORATORY SELECTION AND QUALITY ASSURANCE/QUALITY CONTROL

The selection of any laboratory will be based on the ability of the laboratory to demonstrate compliance to this section with experience and capability in the following major categories:

- Comprehensive written QA/QC program
- Technical analytical expertise
- Effective information management systems.

The QA and QC requirements outlined in this section are applicable to laboratory activities governed by this WAP.

B.5.1 Evaluation of Laboratories

All laboratories providing analytical support to T-Plant Operating Unit Group are required to have a current, laboratory approved QA plan. The laboratory QA plan will be submitted to the T-Plant Operating Unit Group, and to Ecology in accordance with TPA Action Plan Section 6.5, for review as a secondary document before commencement of analytical work. The QA plan will, at a minimum, address the following elements:

- Sample custody and management practices (also refer to Section B.4.)
- Sample preservation protocols
- Sample preparation and analytical method requirements
- Instrument maintenance and calibration requirements
- Internal QC measures, e.g., method blanks, spikes, duplicates
- Corrective action processes.

Each laboratory will be audited periodically by an independent organization to evaluate the effective implementation of the laboratory's QA/QC program. QA personnel and technical expert evaluate the laboratory through onsite observations and/or reviews of the following documentation: copies of the QA/QC documents; records of surveillances/inspections; audits; non-conformances, and corrective actions. T-Plant Operating Unit Group ensures independent organizations; QA personnel and technical experts are qualified to perform these evaluations.

B.5.2 Quality Assurance/Quality Control Objectives

The overriding goal of the analytical program is to support the accurate designation of waste and/or demonstrate compliance to LDR standards. The certified laboratory QA/QC programs will be designed to meet the following objectives.

- Minimize errors. Errors may be introduced during preparative, analytical, and/or reporting phases of work. QC program elements will include analyses of samples in accordance with established methods.
- Provide information. The designation of waste relies on a combination of Knowledge, historical data and additional analytical data. Laboratory QA/QC programs will ensure accurate, precise, reliable and reproducible data. Laboratory QA/QC programs also will ensure both knowledge and laboratory analytical data are of the appropriate quality for their intended decision making purpose.

Key QA program elements are designed to provide objective evidence that waste analysis methods meet the performance specifications of T-Plant. QA activities and implementation responsibilities Laboratory QA/QC programs as follows:

- Activity based laboratory inspections. Inspections Laboratory QA/QC programs performed by to verify that specific guidelines, specifications, and procedures for the activities are completed successfully.
- Laboratory analyses. Analyses Laboratory QA/QC programs will be performed by onsite or offsite laboratories on samples of waste using written and approved methods.
- Development of inspection checklists. Checklists are required for laboratory inspections and are designed to ensure that the inspected activity is consistently addressed. Checklists will be completed during the inspection to document results.
- Instrument calibration and calibration verification. These activities are performed by the laboratory and are required for ensuring data of known accuracy and precision. Calibration data will be maintained and stored to ensure traceability to reported results.

- Laboratory QA/QC inspection results and instrumental calibrations will be documented in accordance with Section B.8, Recordkeeping.

B.5.3 Laboratory Quality Assurance/Quality Control

All analytical work will be defined and controlled by a statement of work, work order, or other work authorizing documentation. These work authorization documents will include QA/QC performance requirements. Samples will be handled according to controlled laboratory procedures. The accuracy, precision, and limitations of the analytical data will be evaluated through QC performance.

As needed, T-Plant will conduct evaluations to determine completeness of information and whether waste meets the acceptance criteria for treatment, storage, or disposal at one of the Hanford Facility Operating Unit Groups or those of a chosen offsite TSD facility. Testing and analytical methods will depend on the type of analyses sought. For parameters or methods not otherwise specified in Section B.3, the most current revisions of the following are acceptable sources of testing methods.

- Analytical methods cited in WAC 173-303;
- The most recently promulgated version of *Test Method for Evaluating Solid Waste: Physical/ Chemical Methods*, SW-846, U.S. Environmental Protection Agency, EPA, Office of Solid Waste;
- Other current U.S. EPA methods, as applicable to the matrix under evaluation;
- *Standard Methods for the Examination of Water and Wastewater, American Public Health Association* (APHA), American Water Works Association, Water Environment Federation;
- *Annual Book of ASTM Standards, American Society for Testing and Materials*;
- *AOAC Official Methods of Analysis*, AOAC (Association of Official Analytical Chemists), International.
- SW-846 methods modified to meet ALARA concerns may be performed subject to Ecology approval.

B.5.4 Data Assessment

Data used for decision making need to be scientifically sound, of known quality, and thoroughly documented in the Hanford Facility Operating Record, T-Plant file. The T-Plant is responsible for the quality of the data and project usability. Data are assessed to determine compliance with quality standards and established by this Permit in Section B.5.3 will be as follows.

Precision – Precision represents a measure of the reproducibility of measurements under prescribed similar conditions. Sample precision is calculated on the basis of duplicate analyses. Acceptance criteria shall be established for each analyte and each analyte method, and shall be agreed on by the laboratory and the client.

Accuracy – Accuracy represents the degree to which a measurement agrees with an accepted reference or true value. Sample accuracy is expressed as the percent recovery of a spiked sample. Acceptance criteria shall be established for each analyte and each analyte method, and shall be agreed on by the laboratory and the client.

Representativeness – Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, a parameter variation at a sampling point, a process condition, or an environmental condition. Representativeness of a population or an environmental condition depends heavily on sampling and is addressed in other documents. The issue of representativeness will be addressed for the following points:

- Based on the generating process, the waste stream, and its volume, that an adequate number of sampling locations will be selected;
- The representativeness of selected media has been defined accurately;

- The sampling and analytical methodologies as defined in this WAP Tables B.1, B.2, and B.3;
- The environmental conditions at the time of sampling are documented in accordance with Section B.8, Recordkeeping.

Completeness – Completeness is a measure of the amount of usable and/or valid data obtained from a measurement system compared to the total amount of data requested. Completeness can be used to evaluate the amount of data produced that meets the client's requirements (e.g., accuracy, precision). In some cases, data may not meet all the requirements, but may still be used for qualitative information as an indicator of the presence or absence of a parameter.

Comparability – Comparability is the confidence with which one data set can be compared to another. For each analyte, comparable precision and accuracy depend on the method and the sample matrix. To be comparable, similar precision, accuracy, and method detection limits shall be achieved on samples with similar matrices using similar analytical methods. Factors such as the analytical method selected, method detection limits or uncertainty, precision, accuracy, and matrix effects must be considered in the decision making process when data sets from multiple laboratories is to be compared.

B.6 SELECTING WASTE RE-EVALUATION FREQUENCIES

The waste profile and supporting data and documentation will be re-evaluated at least annually, or whenever the generator has informed T-Plant Operating Unit Group of a change in the waste generation process, or if waste received at T-Plant Operating Unit Group or the description on the shipping documentation does not match the waste profile. If the generator has informed T-Plant Operating Unit Group of a change in the waste generation process, the waste re-enters the waste stream approval process described in Section B.2.1.1. T-Plant operating organization will evaluate waste receipt verification data against the waste profile to identify any waste streams for which a change in the waste generation process is suspect. When a waste stream is suspect, that waste stream will re-enter the approval process described in Section B.2.1.1.

When a waste profile is re-evaluated, T-Plant operating organization may request the generator to do one or more of the following:

- Verify accuracy of the current waste profile;
- Supply a new waste profile;
- Submit a sample for laboratory analytical chemical analysis to confirm that the waste is still within the profile parameters.
- Document the nature of any generating process changes with respect to dangerous waste listing definitions.

B.7 SPECIAL WASTE ANALYSIS PROCEDURAL REQUIREMENTS

This section discusses special process requirements for receiving dangerous and/or mixed waste at T-Plant Operating Unit Group.

B.7.1 Processes for Receiving Onsite Waste and Offsite Waste

The processes for receiving waste are described in Section 2. In general, mixed waste received from onsite generators is managed the same as waste received from offsite generators. Differences include, but are not limited to the following: (1) physical/chemical screening frequencies for verification [minimum percentages of 5 percent for waste from onsite generators and 10 percent for waste from offsite generators (note that chemical screening frequency depends on the physical screening frequency)], (2) shipping documentation (Uniform Hazardous Waste Manifests are used for waste from offsite generators and shipping documents are used for waste from onsite generators), and (3) LDR documentation requirements for mixed or dangerous waste (notification for waste from offsite generators and equivalent information from onsite generators).

B.7.2 Processes for Ignitable, Reactive, and Incompatible Waste

T-Plant accepts ignitable, reactive, or incompatible waste (refer to Section 1.2). Pre-shipment review and/or chemical screening requirements in Section 2.0 are used to identify whether the waste is ignitable, reactive, or incompatible. T-Plant dangerous waste management units waste acceptance criteria identifies certain management requirements for ignitable, reactive, and incompatible waste, ensuring the waste will be stored in a safe manner.

Appropriate precautions will be taken when ignitable, reactive, or incompatible waste is stored within T-Plant in accordance with Addendum C, Process Information. Treatment and storage of ignitable, reactive, or incompatible waste within T-Plant will be accomplished in accordance with WAC 173-303-395(1)(b) and documented in accordance with WAC 173-303-395(1)(c). The annual inspection for ignitable and reactive waste is addressed in Addendum I, Inspection Plan.

A compatibility review will be performed on wastes being considered for acceptance into T-Plant: (1) during the waste acceptance process based upon waste chemical characteristics, and/or (2) when additional information becomes available on waste form or waste constituents. The compatibility review for the Waste Retrieval Project Waste will be performed on the information contained in the Acceptable Knowledge documentation for the waste stream. If additional information becomes available during the waste processing steps, the compatibility of the waste container/stream will be re-evaluated.

The compatibility review process covers compatibility between chemicals within a waste matrix, compatibility between multiple containers within a lab pack, and compatibility between a waste container and the waste it contains. The storage category (hazard class) will be updated as necessary following the compatibility review. The storage category will be used to ensure incompatibile wastes are not stored together. The chemical compatibility matrix used is consistent with approach documented in *A Method for Determining the Compatibility of Hazardous Waste* (Hatayama *et al*, 1980) (http://www.uos.harvard.edu/ehs/environmental/EPAChemicalCompatibilityChart.pdf).

The compatibility review process considers the available characterization data and waste designation. The conditions against which compatibility will be measured include the following:

- Storage lasting for 20 years
- Lack of a temperature controlled environment
- Amount of material
- Stability of components and reactivity
- Consequence of inner containers breaking
- Compatibility of waste with absorbent
- Container material

B.7.2.1 Provisions for Compliance with Federal and State Land Disposal Restriction Requirements

LDR requirements restrict the land disposal of certain types of waste subject to the *Hazardous Waste Management Act of 1976*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268, incorporated by reference by, WAC 173-303-140. Wastes that are otherwise prohibited from land disposal may be land disposed of the treatment standards established by WAC 173-303-140 are satisfied.

Generators determine what LDR treatment standards apply to the mixed and/or dangerous wastes, and make an evaluation of whether or not these treatment requirements have been satisfied. For wastes subject to concentration-based treatment standards, compliance with LDR treatment standards will be evaluated through analysis of a representative grab sample of the waste. For those LDR constituents subject to treatment for the listed and characteristic waste numbers that apply to the waste, including any UHC identified by 40 CFR 268.2(i), if the Knowledge of the generator is not sufficient to make

complete constituent determinations. If the waste does not meet the applicable treatment standards, the generator will provide waste information with each shipment stating so, in accordance with WAC 173-303-380(1)(j),-(k),-(l),-(m),-(n), or -(o). If the waste meets the LDR standards, the generator must send a certification that the waste meets the treatment standards.

B.7.2.2 Sampling and Analytical Methods

It is recognized that ALARA concerns may warrant modifications to the methods to ensure appropriate protection of personnel health and safety without impact to the method or sample integrity. Waste analyzed using SW-846 methods modified to address ALARA protection concerns will be considered acceptable provided the applicable data quality objectives specified in the modified SW-846 methods will be met.

Samples of waste will be transferred to T-Plant dangerous waste management unit for sample management areas refer to Addendum C, Process Information for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples will be collected in accordance with SW-846 and as described in Section B.4. Sample storage will be provided for waste containers while awaiting laboratory analysis results.

B.7.2.3 Waste Treatment

Waste is treated to meet LDR as specified in 40 CFR 268 and WAC 173-303-140 with the exception of mixed waste designated by the Secretary of Energy for a disposal facility pursuant to the *Land Withdrawal Act*. Mixed waste designated by the Secretary of Energy for a disposal facility pursuant to the Land Withdrawal Act will have LDR requirements determined based on the Tri-Party Agreement M-091 milestones. Mixed waste is treated to the applicable standards required by the disposal facility or other applicable requirements. The CWC can perform limited treatment on waste before shipment to an on-site TSD unit or offsite TSD facility that could perform full treatment of the specific waste to meet LDR treatment requirements. Waste requiring treatment other than what the CWC can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment method. Prior to treatment of waste, the CWC will have in place processes to ensure safe waste treatment as defined in Section B.1.1.2.2 of this WAP. When characteristics of the waste are changed as a result of treatment or other processing, documentation will be entered into the unit-specific operating record.

When evaluating the treatability of certain characteristic waste, consideration must be given to any additional UHCs that exist above universal treatment standards in 40 CFR 268.48. When the concentration-based standards are used, the constituent concentrations for the waste must fall below those specified in 40 CFR 268.40 and/or 268.48 for UHCs and in WAC 173-303-140 for land disposal without treatment. If the concentrations exceed these limits, the waste must be treated before disposal. The alternative treatment standards for hazardous debris as specified in 40 CFR 268.45 or for contaminated soil as specified in 40 CFR 268.49, or for labpacks in 40 CFR 268.42(c) could also be used.

Waste will be treated to meet LDR treatment standards applicable pursuant to WAC 173-303-140 with the exception of mixed waste designated by the Secretary of Energy disposal to pursuant to the *Land Withdrawal Act*, as amended.[2] In addition to the LDR treatment standards, wastes will be treated to the applicable standards required by the offsite TSD facility.

T-Plant Operating Unit Group may partially treat or pre-treat certain waste before shipment to a permitted offsite TSD facility that can perform full treatment of the specific waste to meet LDR treatment requirements and any other disposal Operating Unit Group specific treatment requirements. Prior to

[2] Subject to "*State of Washington v. Bodman,*" presently on appeal before the United States Court of Appeals for the Ninth Circuit, No. 06-35227.

treatment of the waste, T-Plant will have in place procedures that ensure safe waste treatment as defined in Section B.1.1.1.2 of this WAP.

When characteristics of the waste change as a result of treatment or other processing, documentation of the characteristic change will be in accordance with Section B.8, Recordkeeping. When evaluating the treatability of certain characteristic waste, consideration must be given to any potential additional UHCs that might be found in certain characteristic waste.

The treatment standards, for the most part, are concentration-based. When the concentration-based standards are used, the constituent concentrations for the waste must fall below those specified in 40 CFR 268.40 and/or 268.48 for UHCs, incorporated by reference by WAC 173-303-140. For waste subject to state-only LDR requirements, the waste must meet the treatment standards in WAC 173-303-140 for land disposal without treatment. When the concentrations exceed these limits, the waste must be treated before disposal. The alternative treatment standards for hazardous debris as specified in 40 CFR 268.45 or for contaminated soil as specified in 40 CFR 268.49, as established in a site-specific treatability variance pursuant to 40 CFR 268.44 (h), or for labpacks in 40 CFR 268.42(c) all incorporated by reference by WAC 173-303-140 may also be used.

Treatment can consist of, deactivation (neutralization, cementing, absorption), stabilization (cementing, absorption, and encapsulation); compaction, sorting, and repackaging of waste only within the authorized T-Plant dangerous waste management units identified in this permit;

Deactivation will be used to remove the hazardous characteristics of the waste due to its ignitability (D001), corrosivity (D002), solid corrosive acid (WSC2), and/or reactivity (D003). Treatment techniques may include neutralization, absorption, cementing, controlled reaction with water and macro-encapsulation.

- Neutralization will be the primary method of treatment for corrosive waste that has a pH less than or equal to 2 and/or greater than or equal to 12.5.
- Cementing or grouting will be the primary method of treatment for ignitables consisting of metal fines. These types of waste are deactivated by mixing and binding it with an inert cementacious material.
- Encapsulation will be a treatment for debris.
- Absorption will be the primary method of treatment for ignitable waste, which includes waste that is liquid and has low total organic carbon content (less than10 percent).

Stabilization methods used by T-Plant operating organization include cementing or grouting, sealing, and absorption. Particulates and/or liquid waste containing hazardous constituents may be cemented or grouted at T-Plant to meet its waste acceptance criteria. These types of waste are stabilized by mixing and binding the waste with an inert material. When dealing with some waste streams, such as sludges that may contain an inconsistent or excess liquid content, absorbent may be added to the waste to provide a drier matrix allowing identification of the proper combination of ingredients to ensure a successful stabilization effort.

Treatment of state-only extremely hazardous waste (WT01, WP01, and WP03) will be performed in accordance with Revised Code of Washington (RCW) 70.105.050(2) for mixed waste, and/or WAC 173-303-140(4)(a) for dangerous waste.

Waste managed at T-Plant Operating Unit Group will be treated to meet either concentration-based treatment standards or technology-based standards. The alternative treatment standards for hazardous debris as specified in 40 CFR 268.45 or for contaminated soil as specified in 40 CFR 268.49 may also be used. When dealing with multiple dangerous waste numbers, all treatment standards apply, requiring a treatment train for ultimate compliance to LDR. In some instances, as with the cementing process, treatability studies will be performed to ensure that when the waste is treated, LDR requirements will be met.

Representative samples will be collected on each batch of concentration-based treated waste to ensure that the treatment process was successful. For specified technologies, T-Plant will document in the Hanford Facility Operating Record, T-Plant file information that demonstrates that the concentration-based treatment was well designed and executed.

B.7.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and analytical results expressed as constituent concentration have verified compliance with the LDR treatment standards, certification of the LDR treatment will be prepared by T-Plant. The certification statement is prepared by T-Plan T in accordance with 40 CFR 268.7(b, d, and e). A copy of the certification will be placed in T-Plant operating record in accordance with Permit Condition II. I.

When a prohibited waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 incorporated by reference by WAC 173-303-140, this information will be placed in T-Plant operating record, in accordance with WAC 173-303-380(1) (k), (n), and (o) facility recordkeeping.

B.8 RECORDKEEPING

Recordkeeping requirements applicable to this addendum are described as follows:

a. Confirmation records described in Section B.2. will be maintained in accordance with Condition II.I.1 and Condition II.I.5.c of the *Hanford Dangerous Waste Permit.*

b. Waste information documentation described in Section B.2. will be maintained in accordance with Condition II.I.1 and Condition II.I.5.c of the *Hanford Dangerous Waste Permit.*

c. Waste sampling records and associated documentation described in Sections B.3. and B.4. will be maintained in accordance with Condition II.I.1 of the *Hanford Dangerous Waste Permit.*

d. Laboratory records and associated documentation described in Section B.5 will be maintained in accordance with Condition II.I.1 of the *Hanford Dangerous Waste Permit.*

e. Documentation regarding waste re-evaluation frequencies described in Section B.6 will be maintained in accordance with Condition II.I.1 and Condition II.I.5.c of the *Hanford Dangerous Waste Permit.*

f. Special waste analysis requirement documentation described in Section B.7 will be maintained in accordance with Condition II.I.1and Condition II.I.5.c of the *Hanford Dangerous Waste Permit.*

B.9 REFERENCES

ASNT, 2001, *Personnel Qualification and Certification in Nondestructive Testing*, SNT-TC-1A, American Society for Nondestructive Testing, Columbus, Ohio.

Code of Federal Regulations, as revised, Office of the Federal Register National Archives and Records Administration.

Ecology 1997, Close out of May 21, 1996 Dangerous Waste Compliance Inspection of Mis-Designated Waste Received at Hanford, Washington State Department of Ecology, Richland WA, April 11, 1997 (Enclosure dated April 2, 1997).

Ecology, 2004a, Administrative Order #1671, Washington State Department of Ecology, Lacey WA, September 21, 2004

Ecology, 2004b, Clarification on Administrative Order #1671, Washington State Department of Ecology, Lacey WA, September 22, 2004

Ecology, 2004c, Clarification Administrative Order #1671, Washington State Department of Ecology, Lacey WA, September 24, 2004

EPA, 1983, *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-7-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

EPA, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-B*, SW-846, as amended, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C. Available on the Internet at www.epa.gov/SW-846/main.htm.

NIOSH, as amended, *Registry of Toxic Effects of Chemical Substances*, U.S. Department of Health and Human Services, Public Health Service Centers for Disease Control and Prevention national Institute for Occupational Safety and Health. Available on the Internet at http://www.cdc.gov/niosh/97-119.html.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended, Washington State Department of Ecology, Olympia, Washington.

This page intentionally left blank.