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FEMP APPLICATION TO SHIP WASTE TO THE NEVADA TEST SITE
REVISION 5 - VOLUME 2 OF 2 - JUNE 1993 ***DRAFT***

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FEMP
Application To Ship Waste To The Nevada Test Site

Revision 5

Volume II

June 1993

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation

P. O. BOX 398704
CINCINNATI, OH 45239-8704

PREPARED FOR THE

U. S. Department of Energy

FERNALD FIELD OFFICE
UNDER CONTRACT DE-AC05-92OR21972

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Attachment to: G-43294 DOE-2250-93

APPENDIX I

6054

FEMP/SUB-xxx
UC-xxx

FEMP WASTE CHARACTERIZATION PLAN

DRAFT

by

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November 30, 1992

Prepared for the

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Under Contract DE-AC05-860R21600
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Fernald Field Office

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1.0 Introduction

The Fernald Environmental Management Project (FEMP) is a Department of Energy (DOE) facility located on approximately 1,050 acres of land in a rural area 20 miles northwest of downtown Cincinnati, Ohio. This facility operated from 1951 to 1989 processing feed materials for the production of low-enriched uranium products. Currently the site mission is the implementation of environmental restoration initiatives to address environmental impacts associated with the site's past and present operations.

Many of the FEMP restoration activities, as well as the facility support and maintenance functions, generate waste materials. In addition, when the facility ceased production in 1989 there remained a large, but finite inventory of materials associated with the production process. All of these materials/wastes require characterization to ensure safe, compliant, and appropriate management to support environmental restoration and waste management goals at the FEMP and at supporting programs and facilities.

This document serves two main functions. First, it provides an overview of the waste characterization process at the FEMP for external customers (e.g., the Nevada Test Site or external auditors). Second, it specifies the decision-making criteria used at the FEMP to complete waste characterization.

1.1 Goals and Objectives

The waste characterization program at the FEMP serves three primary goals: 1) to support health and safety programs, 2) to comply with the waste characterization requirements of regulatory programs and legal agreements, and 3) to provide information required to ensure operational compliance for materials management. Several key objectives must be met to ensure the integrity of the program:

- The **program structure** must be identified, including program scope (what it covers) and characterization processes (how it functions).
- The program requirements to produce **data of sufficient quality** to support the decision-making processes must be identified.
- The key questions to be answered must be clearly stated. The **evaluation criteria** for answering each key question and specific data requirements for decision making must be specified.

- The waste characterization program must support other FEMP programs by providing **outputs for client programs** (i.e., those programs ultimately managing and/or disposing of the waste).

- There must be a **documentation system** that substantiates decision-making criteria and provides traceability to waste and individual waste packages.

This Waste Characterization Plan is structured in five major parts to present the implementing processes and supporting guidance designed to meet each of these objectives. Figure 1.1 provides a graphic illustration of the relationship of the waste characterization program to FEMP operations.

1.2 Program Scope

Waste characterization is required for *all* wastes generated or managed at the FEMP. Characterization is also required for environmental media (e.g., soils) that must be managed as waste because they contain materials regulated under one or more of the material specific regulatory authorities.

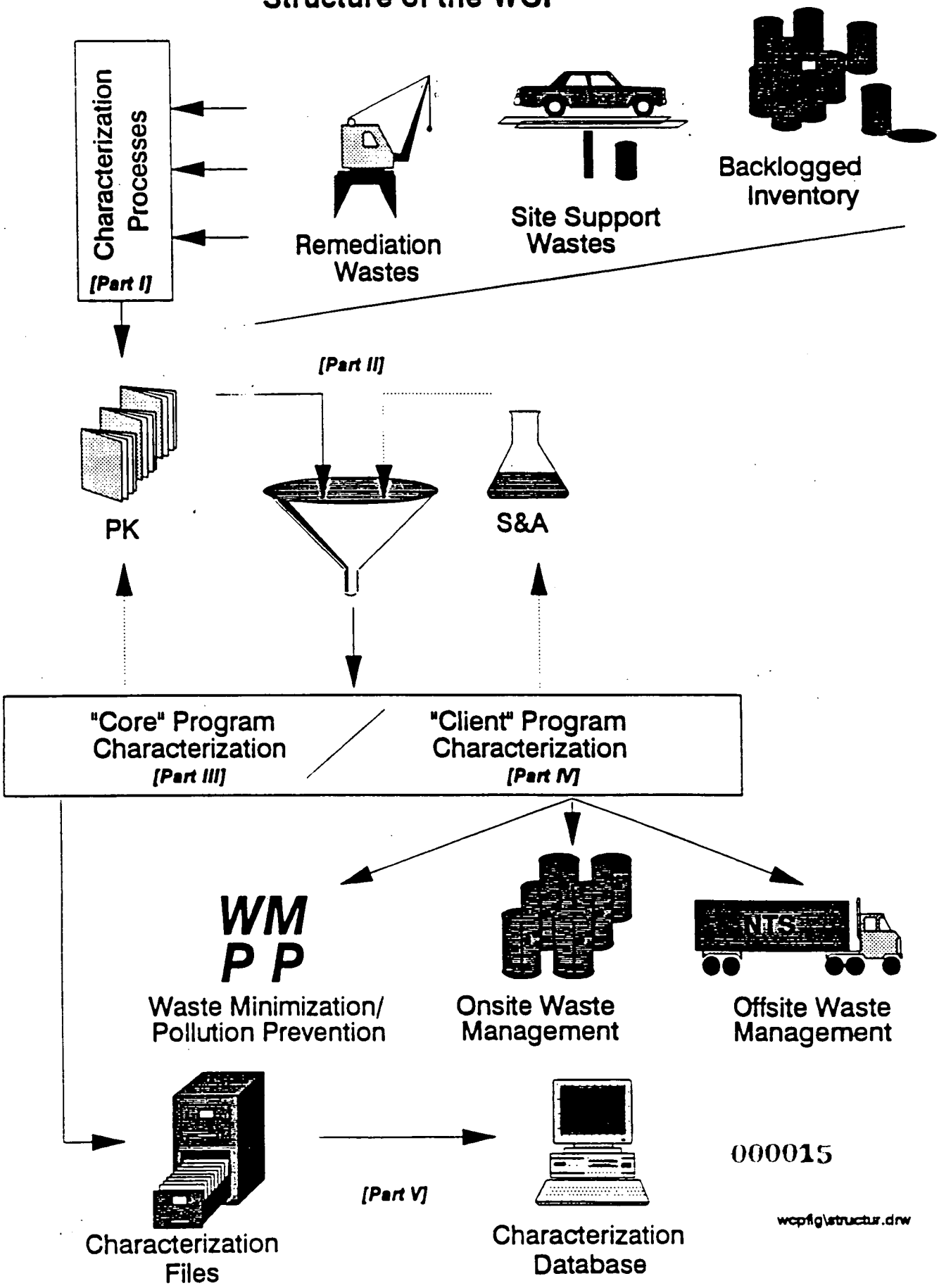
Wastes generated at the FEMP fall into four broad categories. These categories and their related waste characterization processes include:

- **Backlogged Waste:** wastes previously generated which require characterization. These wastes may be containerized, stored in a land-based unit or tank, or may still reside in a process unit or associated piping. These materials are generally being characterized under schedules negotiated with the regulatory agencies. They are characterized through the General Material Evaluation Form (MEF) Process. [*Section 2.1*].

- **Newly-Generated Waste:** wastes generated on an ongoing basis to support FEMP operations. Many of these wastes are associated with ongoing processes or programs (e.g., sampling and monitoring programs). These wastes are also characterized through the General MEF Process. [*Section 2.1*].

- **Large Volume/Low Hazard Waste:** a limited number of specific wastes which are not amenable to sampling and can be characterized based on conformance to a specified set of criteria. Currently, these wastes include scrap metal, scrap wood, and scrap vehicles. These wastes are characterized using a checklist tailored to each waste form which specifies

Figure 1.1
Structure of the WCP



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stringent conditions that must be met in order for the waste to meet the waste stream profile documented on an MEF. [*Section 2.2*].

- **Project-Generated Waste:** wastes associated with specific projects with sufficient lead time to plan for waste characterization/management activities. Projects include construction and maintenance activities as well as projects associated with the CERCLA program onsite (e.g., removal actions or treatability studies). These wastes are characterized through the Project Waste Characterization Process. [*Section 2.3*].

The program maintains its integrity and continues to make improvements over time through the coordinated efforts of numerous organizations and individuals at the FEMP. Of particular note, the departments responsible for health and safety, environmental compliance, and quality assurance provide key inputs to the program.

The waste characterization program relies on two basic types of information: process knowledge (PK) and sampling and analysis (S&A) data. [*Sections 3.0 and 4.0*]. The Sitewide CERCLA Quality Assurance Project Plan (SCQ) governs the processes for data gathering activities at the site. The SCQ provides the framework for developing data of known quality to support decisionmaking.

Regardless of the implementing process, each waste is evaluated to determine if it is regulated under one or more of the waste specific regulatory authorities when generated. The "core" characterization program provides the means for identifying if wastes are regulated as:

- Solid Waste: [*Section 5.0*];
- Hazardous Waste: [*Section 6.0*];
- Radioactive Waste: [*Section 7.0*];
- PCB Waste: [*Section 8.0*];
- Regulated Asbestos Containing Materials: [*Section 9.0*]; or
- Infectious Waste: [*Section 10.0*].

Depending on how materials are to be managed/disposed, materials are evaluated with respect to the requirements of one or more "client" programs. Client programs broadly include waste minimization, onsite waste management, and offsite waste management. [*Sections 11.0 - 13.0*]. Examples of specific client programs include:

- Waste Minimization Opportunity Assessments [*Section 11.0*];
- Onsite Containerized Storage [*Section 12.0*]; and
- Low Level Radioactive Waste (LLRW) Shipping to the Nevada Test Site (NTS) [*Section 13.1*].

Finally, the program provides for documentation of the waste characterization process to meet regulatory requirements and to provide a means for program assessments through internal and external audits. Documentation is captured in the waste characterization files, the waste determination database, and the Material Control & Accountability (MC&A) Inventories. [*Section 14.0*].

1.3 Hierarchy of Documentation

The FEMP waste characterization program represents a cohesive management approach to meeting waste characterization needs at the FEMP. Work elements are conducted and controlled through a hierarchy of documentation supporting site operations (Figure 1.3). Program documentation is prepared to fulfill the driving regulatory, DOE and corporate requirements. These drivers result in a series of FEMP site and individual supporting departmental policies and procedures controlling every aspect of program operations. Key site documents related to waste characterization that are referenced in this document are included in Appendix A.

This plan serves as a *Site Non-operational Document* in its capacity as an Information Manual describing the Waste Characterization Program. It is also a *Section Work Plan* for Facilities and Materials Evaluation (FME) defining the processes and decision-making criteria by which FME completes waste characterizations.

This document has been structured to provide both the decision-making criteria and the implementing steps for completing waste characterization. For each major area discussed in this document, the following items are provided:

- Process or decision-making flow charts;
- Narrative elaborating or clarifying the role of each step in the process;
- Forms for documenting actions/decisions in the process; and
- Guidance for completing the forms.

Figure 1.3
Document Hierarchy

Drivers

- DOE Orders
- State and Federal Laws
- Legal Agreements
- Corporate Policy

Policy & Management Directives

- Department & Committee Charters
- Policy & Procedures

Charter - A document defining the work scope & responsibilities of a department, committee, council, board, or function.

Policy & Procedure - A statement of management policy followed by a series of administrative instructions, including responsibilities & principal actions effecting two or more departments.

Site Operating & Interfacing Documents

- Plans
- Information Documents
- Requirements Documents
- Site Operating Documents

Plan - A document identified as required by a driver or information defining actions to be taken to meet a requirement.

Information Document - Information compiled on a subject and presented to be informative for personnel of the FEMP or as required by external organizations.

Requirements Document - A document defining requirements for an activity effecting two or more FEMP organizations.

Site Standard Operating Document - A procedure that provides detailed operating instructions for an activity to two or more FEMP organizations.

Department Documents

- Department Procedures
- Plans
- Manuals

Department Procedure - A procedure that provides instructions to only one FEMP organization.

Plan - A document identified as required by a driver for only one FEMP organization in order to meet a requirement.

Manual - A document that provides detailed requirements/instructions effecting only one FEMP organization.

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Much of the material provided in this document summarizes information provided in detail in other site documentation. Where needed, referenced site documentation must be consulted for added detail.

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2.0 FEMP Waste Characterization Processes

The FEMP has developed three processes to complete waste characterization: 1) the General MEF Process; 2) the Checklist MEF Process; and 3) Project Waste Characterization. They are sufficiently similar to afford consistent evaluation of both "core" and "client" program criteria. Each process generates comparable documentation utilizing many of the same forms and worksheets.

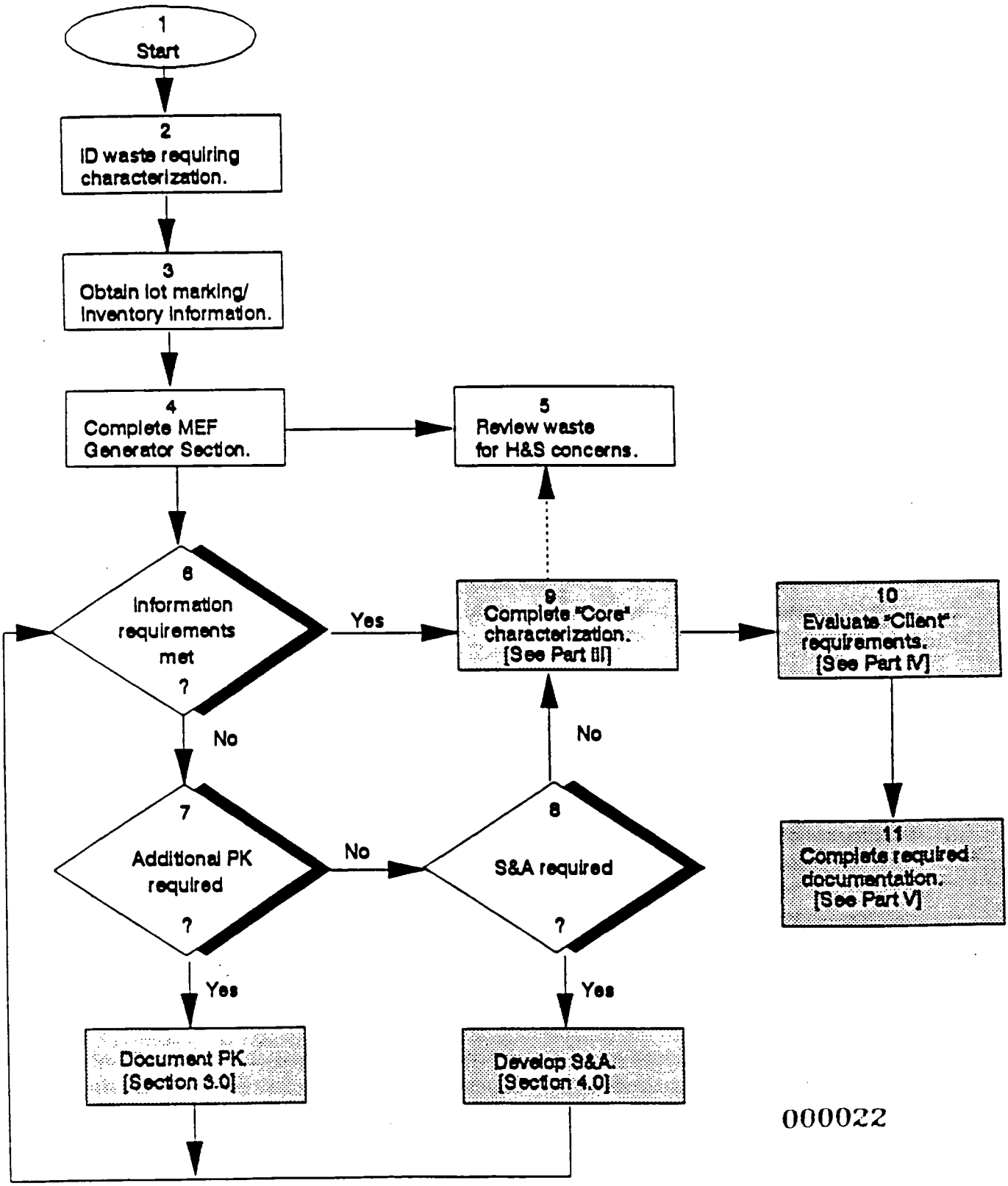
Of the three processes, the General MEF Process [Section 2.1] is the most widely used at the FEMP. The responsibility for initiating this process lies with the waste generator. FEMP policy dictates that waste be characterized prior to generation which requires consideration of waste characterization and management needs during the planning stages of any given activity. Because waste generation isn't always planned (e.g., spill response materials, certain maintenance activities) some waste must be characterized after generation.

The Checklist MEF Process [Section 2.2] was developed to streamline the General MEF Process for certain easy-to-characterize and frequently-generated wastes (e.g., scrap metal and scrap wood). Candidate checklist waste streams are evaluated under the General MEF Process and identified as either solid waste (RCRA Subtitle D) or low level waste **provided** they meet a specified set of objective evaluation criteria. These criteria are incorporated into checklists that provide documentation for the evaluation and traceability from the waste container to the appropriate MEF.

Project Waste Characterization [Section 2.3] provides the means for obtaining waste characterization for multiple wastes generated from a single project. Types of projects that use this process include construction and maintenance projects, CERCLA projects (Removal Actions, Remedial Actions, and Treatability Studies) and RCRA closures. Project waste characterizations may be documented by a RCRA Determination/Radiological Characterization (RD/RC) letter, by a General MEF, or an applicable Checklist MEF. The "Construction Waste Identification and Disposition" (CWID) form provides the management tool for coordinating required waste characterizations for a given project. Project Waste Characterization has evolved through a synthesis of the RD/RC letter with the MEF Process. New projects will rely on the MEF and checklists for documentation, while projects in process will continue to be completed by RD/RC letter.

Certain steps in the processes (e.g., requesting sampling and analysis) are covered in more detail later in this document. Detailed information on the implementing procedures must be obtained by consulting the referenced site documentation.

Figure 2.1
General MEF Process



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2.1 General Material Evaluation Form (MEF) Process

Step 1 Detailed administrative directions for completing the MEF are provided in SSOP-0002, "Completing the Material Evaluation Form."

Step 2 The generator is responsible for identifying materials requiring characterization.

Step 3 The generator must obtain lot marking and inventory information for generated wastes. This information provides unique identification of individual containers. This information is provided in RM-0005, "FEMP Lot Marking and Color Coding System."

Step 4 The generator completes the *Generator Section* of the "Material Evaluation Form" (Form 2.1). Directions for completing the form are provided on the reverse side of the form. This form is similar to a commercial treatment, storage and disposal facility "waste profile".

Step 5 H&S identifies any material management requirements that are not addressed by existing SOPs. When additional requirements exist the Health and Safety Addendum to the MEF part of Form 2.1 is completed specifying actions/precautions to be taken. The Addendum is sent to the generator and FME. The addendum must accompany the MEF with the material during all subsequent management steps.

Step 6 FME reviews the *Generator Section* to ensure that all required responses and supporting documentation have been provided. Data requirements to support waste characterization are discussed in Sections 3.0 and 4.0.

Step 7 FME may request additional Process Knowledge (PK) by phone (documented by contact report) or in writing.

Step 8 When S&A data are required, FME completes a "Request for Sampling & Analysis" (Form 4.3) identifying required information to develop a sampling plan. Requirements for S&A to support waste characterization is provided in Section 4.0.

Step 9 The processes and characterization criteria for identifying the regulatory status of materials are presented in Part III of this WCP.

Step 10 The processes and characterization criteria for meeting "client" program requirements for materials management are presented in Part IV of this WCP.

Step 11 Complete documentation, including the *Evaluation Section* of the "Material Evaluation Form," characterization files, and inputs to the Waste Characterization Database.

DIRECTIONS FOR COMPLETING THE GENERATOR/REQUESTOR SECTION OF THE MEF

The Facilities and Material Evaluation Group (FME) under the RCRA Program is responsible for providing characterization for all wastes generated by FEMP personnel/activities. However, it is the individual generator's responsibility to ensure that his/her waste is properly characterized in its present form. The vehic.. for waste characterization is the Material Evaluation Form (MEF) which has 2 formats:

1. General MEF - use this form to request characterization of waste that has already been generated or you are definitely planning to generate (usu after receiving completed waste characterization).
2. Product MEF - use this form to request preliminary characterization of products that are being considered for purchase for FEMP use or that have been purchased in order to determine status of the product if discarded (e.g., clogged spray can, outdated product etc.) and to identify status of wastes (if any) normr generated as a result of using the product. FME will provide a copy of MEFs received to IRS&T for Health & Safety Review.

Note: Generator must follow all applicable procedures and guidelines (labelling/MSDS etc.) for managing the material. Health & Safety will only specify those requirements which are beyond the requirements established for managing the material in procedures or other guidelines. When required H&S will attach a Health and Safety Addendum to the MEF (General and Project Waste MEFs only) which will outline additional H&S requirements. This addendum must be attached to the MEF at all times and the material may not be managed (packaged,transported, sampled etc.) without the addendum when required. MEF Evaluation Section will alert personnel when H&S Addendum is required.

The following directions have been developed to assist in the completion of the generator's section of the General MEF. Please ensure that this is the proper fo for your waste stream by referring to the categories above. Please note that each block of the form must be completed for MEF to be accepted. Use of 'None' 'N/A' is acceptable when appropriate. Upon completion of this form submit to IRS&T for Health and Safety information then forward to FME at MS # 46. [MEFs will not be accepted with incomplete information or lacking documentation (e.g. MSDS, release report, etc)].

PART A: GENERATOR/WASTE STREAM IDENTIFICATION

1. **MEF #:** Enter number of the form as received from FME (x8932).
   MEF Rev #: If this is a revision to current MEF enter rev # as received from FME (x8932).
2. **Date Submitted:** Self Explanatory
3. **Lot Marking Code:** Enter 15 digit lot code # from waste container or for non-containerized wastes provide MTC/SRC contact Materials Control and Accountability for assistance in assigning correct codes.
4. **Generator Name:** provide First Name, Last Name and Middle Initial.
5-6. **Badge No./Co. Name/Phone No:** Self Explanatory

PART B: GENERATION INFORMATION

1. **Name:** Provide the best descriptive name for the material (e.g. spent acetone, dust collector residues, soil borings, purge water etc.)
2. **HWMU:** If the material originates from a Hazardous Waste Management Unit please provide unit name and #. If you are unsure please consult your supervisor or FME at x8932.
3-4. **Generated:** If material has been generated provide current location and date of generation/anticipated generation.
5-6. **Quantity/Frequency:** Estimate amount and how often waste stream is/will be generated - or enter 'one time' for single generation.
7. **Similar waste stream:** Enter MEF # or MTC/SRC for similar waste stream.
8. **Description:** Provide a clear concise description of what the waste stream actually is. Include all components of the waste stream and any relevant information concerning packaging, absorbents etc.
9. **Description of Generation:** Provide a detailed description of how the waste stream is/will be generated. Include specific process involved, history of waste etc. For containerized wastes include packaging information (e.g. labpacked, packed with absorbent materials) Check and include all relevant supporting documentation (e.g. MSDS, SOP, Manufacturing Specification, Release Reports etc.).

PART C: GROSS CHARACTERISTICS

1-3. **COLOR/PHYSICAL STAT/FREE LIQUIDS:** Describe color(s) or material and phase(s) present.
4. **ODOR:** DO NOT SMELL THE WASTE! If the waste has a known incidental odor, than describe it (e.g., acrid, pungent, solvent, sweet).
5. **LAYERS:** Check appropriate box. Multilayered means more than two layers (e.g., oil/water/semi-solid). Bi-layered means comprised of two layers may or may not be the same phase (e.g., water/semi=solid or water/oil). Single phase means the waste is homogenous (e.g., water, or oil, or semi-solid
6. **pH:** If the waste contains free liquids, list the range of pH if known, if the pH is not known mark "not known" in the blank. If a pH range is entered the basis for the range (i.e., litmus paper, MSDS). For non-aqueous wastes enter N/A.
7. **Flash Point:** If the waste contains free liquids list the range of its flash point if known, if the flash point is not known, mark "not known" in the blank. a flash point range is entered, list the basis for the range (i.e., analytical results, MSDS).

PART D: MATERIAL COMPOSITION

1. CHEMICAL COMPOSITION: List all components which make up the waste stream along with the range of the approximate percentage by volume of the components in the waste stream. If only partial knowledge of the components in the waste stream is available, list those components and provide approximate percentage of the waste which is unknown. Also check each component listed as to whether it is known to be present in the waste and approximate concentration if known. (List will include PCB's, Cyanides, Sulfides, RCRA metals.) Provide reason for the components listed in this s
2. WASTE CHARACTERISTICS: Check each box which applies to the waste.
   Water Reactive - Reacts violently with water to form toxic gases vapors, or fumes in a quantity sufficient to present a danger to human health and the environment. (e.g., sodium metal)
   Explosive - Capable of detonation or explosive reaction if subjected to strong initiating source or if heated under confinement.
   Shock Sensitive - Normally unstable and readily undergoes violent change without detonating.
   Pyrophoric - Will ignite spontaneously in air at or below 130 F (54.4 C).
   Etiological - Viable microorganism or its toxin which causes or may cause human disease.
   Other - Indications of other hazardous characteristics must be included (e.g, autopolymerization, peroxide forming.
   None of the above - Check this when no entries above apply.
   Not Known - Check this when adequate information is not available to answer the questions above.
3. RADIONUCLIDE CONTAMINATION: Indicate radionuclide contamination status of the material. If analytical data is available please attach to contact IRS&T for information on radionuclide contamination of materials onsite.

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Fernald Environmental Management Project
MATERIAL EVALUATION FORM (MEF)

6054

Generator/Requestor Section

A. REQUESTOR/WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.: _____	2. Date Submitted:	3. Provide 15 digit Lot Marking and drum #'s if available or Material Type and Source Code:
4. Requestor Name:	5. Phone No.:	6. Badge No./Co. Name:

B. GENERATION INFORMATION

1. Provide best descriptive name for material:	2. Does this material originate in a HWMU? _ yes __ no Unit Name/No.		3. Material has been generated __ yes __ no MC&A Inventory#:
4. Date of first or expected generation: _____ [☐ estimate; ☐ actual]	5. Generation Quantity:	6. Generation frequency:	7. Similar waste stream MEF# (or MTC/SRC):

8. Provide a detailed description of what the material is (including container type):

9. Provide a detailed description of how and where (specific origin) the waste stream is/will be generated- including any units which manage the material:

_____ [Note: Generator must attach all supporting documentation concerning the waste stream. Examples : O additional narrative; O SOP; O Manufacturing Spec; O MSDS; O AEDO Log excerpt; O release report]

C. PHYSICAL CHARACTERISTICS

1. Describe Color/Appearance: _____ _____	2. Physical State: ☐ Liquid ☐ Solid debris/rubble ☐ Semi-solid/sludge ☐ Dry solid residue ☐ dry powder/dusty residue ☐ Other, specify:	3. Contains Free Liquids: based on: ☐ yes ☐ visual ☐ no O PFLT results ☐ unknown attached
[NOTE: DO NOT SMELL THE MATERIAL] 4. Note Any Incidental Odor:	5. Describe Phase/Layers: ☐ single phase ☐ two-layers ☐ multi-layered	6. pH (specify range or "unknown"): _____ [☐ estimate; O analytical results attached]

D. MATERIAL COMPOSITION

1. Composition: Min - Max: Basis for Identifying:

_____ ____ - ____ % _____

_____ ____ - ____ % _____

_____ ____ - ____ % _____

_____ ____ - ____ % _____

maximum must meet or exceed 100 %

[☐ based on knowledge of the material; O analytical data attached]

2. Does the material contain any of the following:
☐ asbestos ☐ polychlorinated biphenyls (PCBs)
☐ cyanides ☐ sulfides
☐ RCRA metals, circle if suspected: (arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium)
☐ None of the above ☐ Unknown
☐ based on knowledge of the material
O analytical data attached

3. Radionuclide Contamination:
☐ material is not contaminated with radionuclides
☐ material contains incidental radionuclide contamination
☐ radionuclide bearing material/residue
[☐ based on knowledge of the material; O analytical data attached]

Radionuclides of Concern if any:
☐ uranium
☐ thorium
☐ transuranics (TRU)
☐ Other: _____

4. Identify any additional characteristics:
☐ water reactive ☐ explosive
☐ pyrophoric ☐ shock sensitive
☐ etiological ☐ other _____

Fernald Environmental Management Project
MATERIAL EVALUATION FORM (MEF)

Evaluation Section

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.:	2. Date Completed:	3. Provide 15 digit Lot Marking if available or Material Type and Source Co
4. Evaluator:	5. Phone No.:	6. Badge No./Co. Name:

B. MATERIAL REGULATORY STATUS

Regulated:	Material Specific Regulation:
___ yes ___ no	TSCA PCBs
___ yes ___ no	CAA Asbestos NESHAPs
___ yes ___ no	State of Ohio Infectious waste
(See Form REG in material evaluation file)	
___ yes ___ no	RCRA Solid Waste (See Form Series SW)
___ yes ___ no	RCRA Hazardous Waste (See Form Series HW)
Hazardous Waste Code(s): _____	

Regulated:	Material Specific Regulation:
___ yes ___ no	Low Level Radioactive Waste (LLRW).
___ yes ___ no	Transuranic Waste (TRU).
___ yes ___ no	NonRadioactive waste***.
(See Form RAD in material evaluation file)	
_____	
***Concurrence, Radiological Assessment	Date
Re-evalution Date: _____	

NOTE: WASTE STREAM MUST BE RE-EVALUATED BY FME IF IT IS GENERATED AFTER THE RE-EVALUATION DATE LISTED ABOVE OR WHEN THERE IS A CHANGE IN THE STREAM/GENERATING PROCES

C. MATERIAL MANAGEMENT:

1. Waste Form Criteria: ___ yes ___ no Health & Safety Addendum Attached. (Note if marked yes do not manage this material without attached H&S Addendum. ___ yes ___ no Material contains free liquids. ___ yes ___ no LLRW meets NVO-325 Waste Acceptance Criteria (See Form NTS in material evaluation file)	2. Container Specification:	3. Reactivity Group Code:
4. DOT Shipping Description:	5. DOT Labels:	6. DOT Identification No.: ☐ UN ☐ NA _____ (Suffix) 7. DOT Hazard Class:

D. DISTRIBUTION

___ Generator _____	___ RCRA Program Manager D. A. Nixon MS# 64
___ MC&A H. J. Knue MS# 28	___ Site Media Sampling M. F. Ramirez MS# 18
___ Facilities and Warehousing B. S. Perkins MS# 63	___ IRS&T R. L. Kruchan MS# 31
___ Sample Disposition (if sampled) _____	___ Waste Reduct Prog. J. T. Witzeman MS# 16
Distributed by:	Date:

Fernald Environmental Management Project
MATERIAL EVALUATION FORM (MEF)

6054

Health and Safety Addendum

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.:	2. Generator:	3. Provide 15 digit Lot Marking if available or Material Type and Source Code:
4. Material Description:		5. Date:

B. HEALTH & SAFETY INFORMATION

The following requirements are mandatory when storing, packaging, sampling or otherwise handling the material. These requirements are in addition to those already specified in procedures regarding the management of materials and any other instruction (e.g., MSDS or label directions).

NOTE: THIS ADDENDUM TO THE MEF MUST BE ATTACHED TO THE MEF. MATERIAL CAN NOT BE MOVED, TRANSFERRED, SAMPLED, STORED, OR OTHERWISE MANAGED WITHOUT THIS FORM ATTACHED (WHERE APPLICABLE). APPLICABILITY OF THIS FORM IS DETERMINED BY CONSULTING THE SECTION C1 MEF EVALUATION SECTION OR FOR MATERIAL BEING SAMPLED BY CONSULTING THE SAMPLING AND ANALYSIS REQUEST MEMORANDUM.

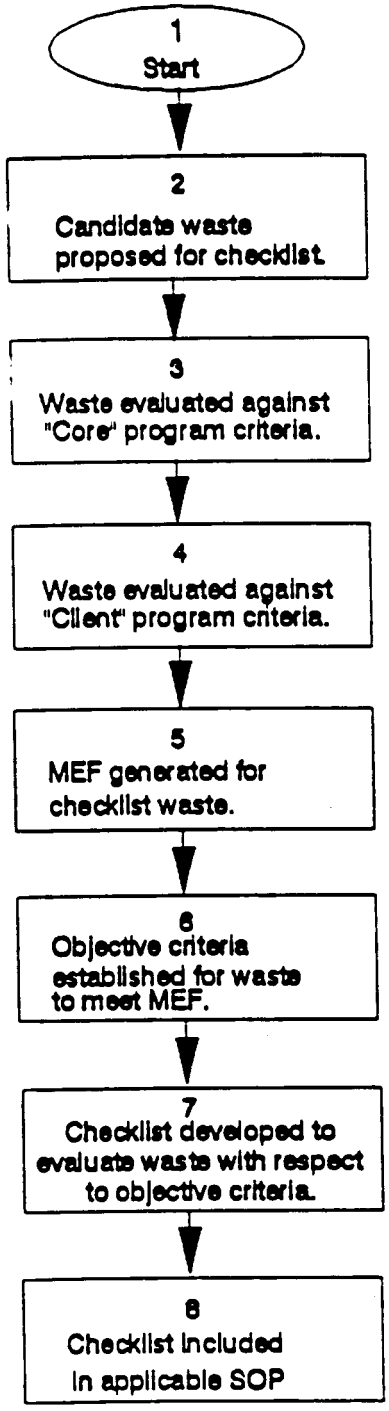
C. DISTRIBUTION

____ Generator		____ RCRA Program Manager	D. A. Nixon MS# 64
____ MC&A	C. J. Stafford MS# 53	____ Site Media Sampling	M. F. Ramirez MS# 18
____ Facilities and Warehousing	B. S. Perkins MS# 63	____ IRS&T	R. L. Kruchan MS# 31
____ Sample Disposition (if sampled)		____ Waste Reduct Prog.	J. T. Witzeman MS# 16
Distributed by:		Date:	

FOR ADDITIONAL INFORMATION REGARDING H&S REQUIREMENTS CONTACT R. L. KRUCHAN AT EXTENSION 89

Figure 2.2(a)
Checklist MEF Process - Development

Checklist Development



Checklists Currently Developed for SSOP-0040:

- Wood (MEF #905)
- Metal (MEF # 1088)
- Light Duty Vehicles (MEF #1230)

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2.2 Checklist MEF Process

Step 1 Checklist Development.

Step 2 Candidate waste streams are generally identified by FME or the waste generator/program. Candidate waste streams are generally: 1) large volume, 2) low hazard, and 3) not readily amenable to sampling. Examples are scrap metal and scrap wood.

Step 3 This evaluation serves to identify the conditions that must be met for the waste stream to be regulated as solely RCRA solid waste or LLRW. This requires consideration of all plausible cases whereby these criteria would not be met. A team comprised of FME personnel, and program management and field personnel generally meet several times to identify and document criteria for the waste stream.

Step 4 This evaluation serves to identify the conditions that must be met to satisfy a targeted client program. For example, the wastes covered by checklists in SSOP-0040 are evaluated for conformance to NVO-325 Waste Acceptance Criteria for shipment to the Nevada Test Site.

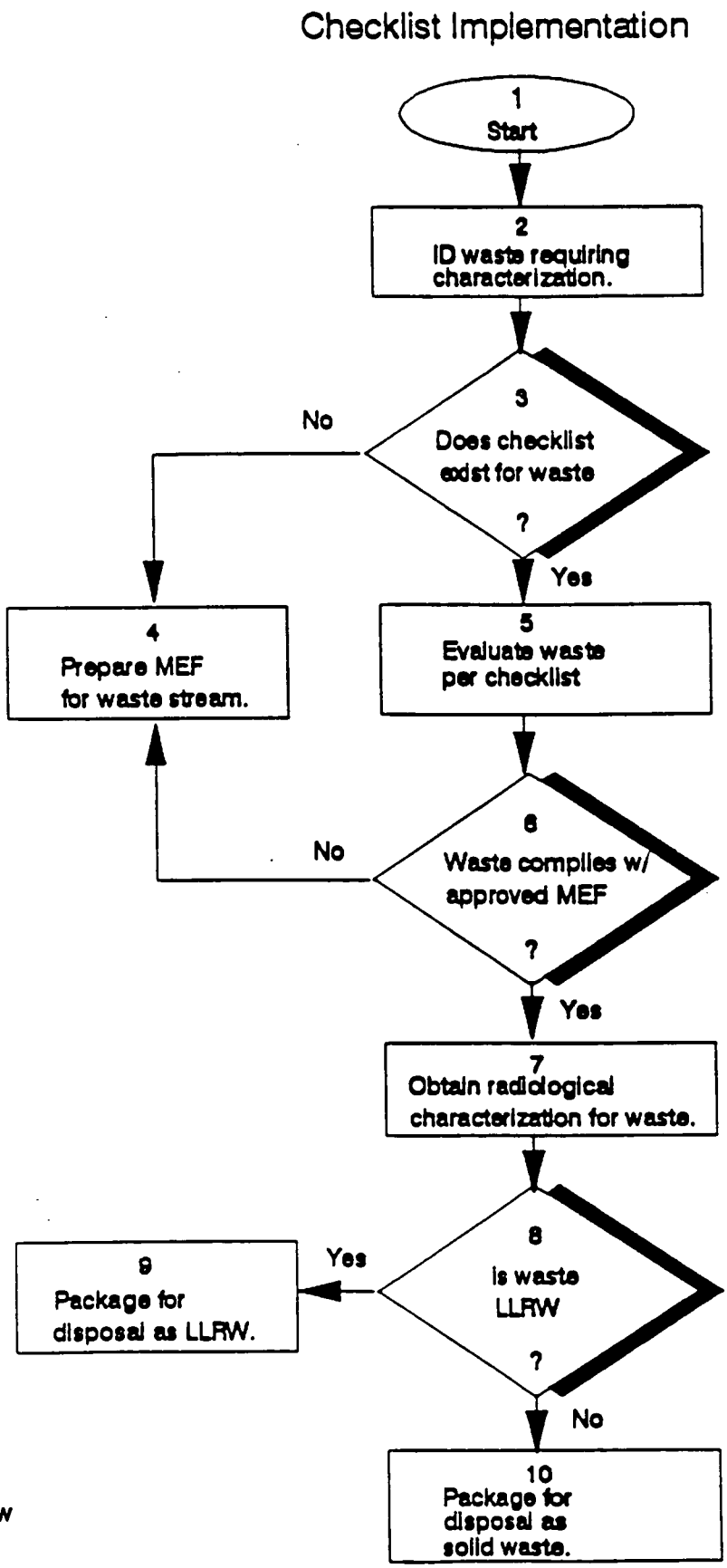
Step 5 The MEF documents the basis for the criteria included on the checklist.

Step 6 The conditions established in steps 3 and 4 and documented on the MEF are restated in terms of objective criteria that can be readily evaluated by the personnel completing the checklists.

Step 7 Developing the actual checklists generally requires field testing to ensure that the checklist criteria remain objective and unambiguous. Field testing should be overseen by FME and Quality Assurance (QA) to identify potential problems in implementation.

Step 8 The SOP provides the operations and administrative instructions for using the MEF to evaluate materials using the checklist. Currently SSOP-0040 has been developed for evaluating certain large volume scrap waste streams for disposal at the Nevada Test Site. See "Checklist Implementation" (next page) for the general process for using the checklist in the field.

Figure 2.2(b)
Checklist MEF Process - Implementation



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2.2 Checklist MEF Process (cont.)

Step 1 Checklist Implementation.

Step 2 Identified during the planning stages of a project or activity.

Step 3 FME can be contacted to determine the availability/applicability of a checklist.

Step 4 When a checklis. oesn't exist an MEF must be prepared for the material. Although a checklist does not currently exist, it may be a good candidate for checklist development. FME must be co' ilted in making this determination.

Step 5 Personnel completing the checklist must be trained to use the checklist. If any questions arise during the evaluation FME may be contacted to provide additional guidance in completing the checklist.

Step 6 If it is determined that a material does not comply with the criteria established in the checklist then the material must **not** be managed as material meeting the checklist. The material must then be evaluated under the General MEF Process [Section 2.1].

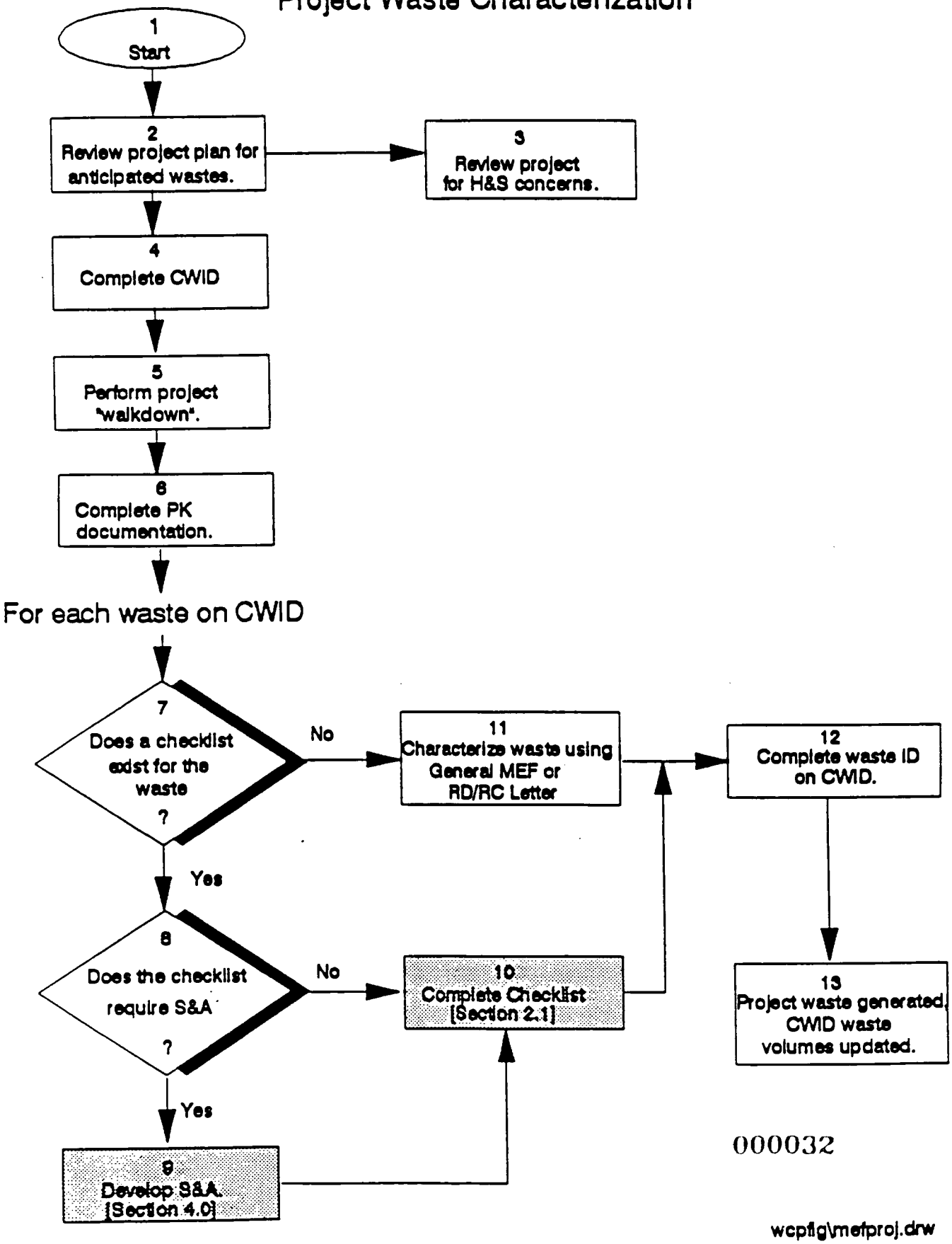
Step 7 Radiological characterization is required when the checklist does not specify if the material is RCRA solid waste or LLRW.

Step 8 The criteria for identifying radioactive waste at the FEMP are discussed in Section 7.0.

Step 9 Managed as LLRW.

Step 10 Managed as RCRA solid waste.

Figure 2.3
Project Waste Characterization



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2.3 Project Waste Characterization

Step 1 Detailed operations and administrative instructions for completing project waste characterization are provided in SSOP-0044, "Controlling the Generation of Construction/Maintenance Waste." This process may be used for wastes resulting from construction and maintenance projects, CERCLA actions (Removal Actions, Remedial Actions, and Treatability Studies) or RCRA closures.

Step 2 During project planning, all wastes anticipated to be generated during any phase of the project are identified by the project engineer or planner estimator (PE in either case).

Step 3 The project is reviewed to identify potential health and safety concerns. Required actions and precautions are incorporated into the project specific health & safety plan. In addition, required work permits (e.g., penetration permits) are developed.

Step 4 The PE lists the types and volumes of wastes expected to be generated from the project on the "Construction Waste Identification and Disposition" form (Form 2.3).

Step 5 A physical walkdown of the project site is completed to collect process knowledge and determine appropriate means to characterize the waste to be generated.

Step 6 PK documentation includes review of the project plans, historical information on the project site, and information collected during the project walkdown.

Step 7 If a checklist exists for the material to be characterized, the waste is characterized via checklist.

Step 8 Checklists for project wastes may require some sampling and analysis to be conducted to verify the checklist criteria (e.g., soils to be excavated from a project may require S&A).

Step 9 Section 4.0 discusses requirements for S&A to support characterization.

Step 10 Checklists are completed in accordance with the applicable SOP.

Step 11 Waste for which a checklist does not exist must be characterized using either a RD/RC letter or the general MEF process.

Step 12 When characterization is complete, FME documents waste characterization on the CWID. RD/RC letters, MEFs, or completed checklists required to manage the material when it is generated are distributed accordingly. FME maintains all supporting characterization files.

Step 13 When the project is completed and all of the wastes generated, the PE updates the CWID to verify final waste volumes to support cost/schedule control system requirements.

FEED MATERIALS PRODUCTION CENTER
CONSTRUCTION WASTE IDENTIFICATION/DISPOSITION FORM

PART I - PROJECT DESCRIPTION

Date ___/___/___

Project Title _____ WMCO Project No. _____

Project Description _____

Project Location (include location drawing if possible) _____

Project Engineer _____ Phone _____ Project Dates: Start ___/___/___ End ___/___/___

PART II - CONSTRUCTION WASTE DETAILS

Date ___/___/___

	UNCONTAMINATED WASTE			CONTAMINATED WASTE		
WASTE TYPE	VOLUME Cu. Ft.	WEIGHT Pounds	DISPOSITION LOCATION *	VOLUME Cu. Ft.	WEIGHT Pounds	DISPOSITION LOCATION *
Soil						
Rubble (concrete,block,etc.)						
Metal						
Process Equipment						
Mixed Solid/Liquid						
Asbestos						
Liquid						
PCBs						
Hazardous/Radioactive Mixed						
Toxic/Radioactive Mixed						
Wood						
Other (specify)						

* Also complete PART III - FUTURE USE MATERIAL OWNERSHIP and DISPOSITION.

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CONSTRUCTION WASTE IDENTIFICATION/DISPOSITION FORM Continued

PART III - FUTURE USE MATERIAL OWNERSHIP and DISPOSITION

OWNER	MATERIAL DESCRIPTION	DISPOSITION LOCATION

cc:
- Manager, Environmental Compliance
- Manager, Fire & Safety
- Manager, Industrial Hygiene & Safety
- Manager, Waste Operations
- ___ Manager, RUST ES&H
- Manager, Environmental and Radiological Monitoring
- Manager, Health Physics
- Manager, Quality Assurance
- Manager, Waste Technology & Plant Projects
- ___ Manager, Maintenance

Form FMPC-T-2716

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3.0 Process Knowledge

Process knowledge generally refers to information other than sampling and analysis results used to complete waste characterizations. The RCRA regulations specifically provide that a waste generator may apply knowledge of the hazard characteristic of the waste *in light of the materials or the processes used.* OAC 3745-52-11(C)(2). Listed waste determinations implicitly require process knowledge to determine whether or not a waste meets one of the listing descriptions in OAC 3745-51-31 to 33. Other regulatory programs implicitly require the use of some level of PK for waste identification (e.g., determining the regulatory status of Category II non-friable asbestos-containing material).

PK may be used to support both negative and positive determinations with respect to a waste's regulatory status. PK to support a "not regulated" determination (e.g., not RCRA hazardous or "non-RCRA") generally requires more supporting documentation than PK that supports a "regulated" determination (e.g., RCRA hazardous or "RCRA"). In making a "not regulated" determination, the assembled PK must reasonably support a case that the material could not exhibit a characteristic or meet a threshold criteria for regulation.

3.1 Knowledge of the Waste Matrix

PK may substantiate a waste determination in one of several ways. First, documented information relating to the material matrix may preclude the waste from exhibiting a characteristic. For example, by definition, a nonliquid waste is not capable of exhibiting the RCRA hazardous waste characteristic of corrosivity. Likewise, bulk structural steel with virtually no absorptive capacity will never fail the RCRA Toxicity Characteristic (TC) (provided no surface coatings have been applied). In this example, even if surface coatings have been applied, knowledge of the characteristics of the coating may be used support a "not regulated" determination for the entire waste form.

3.2 Knowledge of the Generating Process

Second, PK may be used to demonstrate that the generation process was well

documented, controlled, and did not involve the use or generation of any materials that could cause a waste from the process to be regulated. Processes may be as complicated as a pulse column solvent extraction system or as simple as washing a floor. The key in evaluating processes is understanding the feed materials, the chemistry and physics of the process, and the materials that are generated from the process as products, byproducts and waste.

3.3 Cases When Process Knowledge is Most Appropriate

DOE and EPA issued draft guidance for the Characterization of Mixed Waste which discussed the application of process knowledge for waste determinations. The guidance states that PK is *most appropriate* for waste characterization when one or more of the following conditions exist:

1) Collection of representative samples from a waste stream is difficult due to its physical nature. This applies to solid matrices such as metals, glass, or wood materials.

2) Waste collection and analysis of material would result in unacceptable risk of radiation exposure. DOE policy requires that exposure to hazardous material must be maintained as low as reasonably achievable (ALARA).

3) Waste is too heterogeneous in composition to the extent that collecting a representative sample is difficult.

3.4 Objective Documentation for Process Knowledge

Successfully utilizing PK to support waste characterization requires identifying the **objective** information that supports the determination. Reliance on *objective evidence* reduces the potential for a subsequent reviewer to reach a different determination regarding a waste determination. The rationale for the application of PK must be *well documented* in the characterization files so that the logic for reaching the conclusion can be reconstructed if necessary.

Detailed records on the historical production processes and information developed under ongoing CERCLA remedial activities onsite (including RI/FS data such as the Site-Wide Characterization Report) provide useful PK information that can be used as objective evidence. The rigid administrative controls placed on waste

identification and control under the FEMP Lot Marking and Color Coding System ensure that generated wastes are adequately controlled and traceable to the point of generation. In addition, other information sources such as the Assistant Emergency Duty Officer (AEDO) Spill Database, Environmental Compliance Spill/Release Incident Tracking Report, and the Upset Condition Document provide information regarding the generation process.

Cases may occur where PK yields conflicting information or PK does not agree with sampling and analysis results. In such cases one or more of the following actions are undertaken: 1) additional PK is collected to resolve the conflict and documented accordingly, or 2) measurable attributes are tested and results documented. If conflicting PK can't be resolved, a conservative decision (e.g., that a waste is regulated) is made for the waste. All final decision making is documented in the characterization file.

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4.0 Sampling & Analysis

The FEMP sampling and analysis process is designed to generate objective data of known quality to support decision making regarding the regulatory status and management requirements for waste materials. The Data Quality Objective (DQO) process is utilized to establish the quality and quantity of data required to satisfy decision-making needs. The Sitewide CERCLA Quality Assurance Project Plan (SCQ) establishes the framework for ensuring that DQOs are met for individual projects and that quality assurance requirements are implemented on a consistent basis throughout data gathering activities at the FEMP. Individual Sampling & Analysis Plans (SAPs) serve as the event-level document for S&A activities. These SAPs reference standard operating procedures to implement specific SAP requirements. An overview of the S&A process is presented in Figure 4.0.

4.1 S&A Data to Support Decision Making

An essential part of the DQO process involves identifying the key question(s) to be answered. RCRA regulations for waste identification generally require that waste generators determine, with statistical confidence of 90% or greater, whether specified parameters of concern for a given waste stream exceed a regulatory threshold (e.g., toxicity characteristic determinations). A second type of RCRA waste characterization decision involves determining whether or not a waste stream exhibits a particular attribute (e.g., free liquids determination). For regulatory programs that do not specify required confidence levels for demonstrating compliance with respect to a numerical threshold (e.g., TSCA PCB regulations), the FEMP generally utilizes a 90% confidence limit to support decision making.

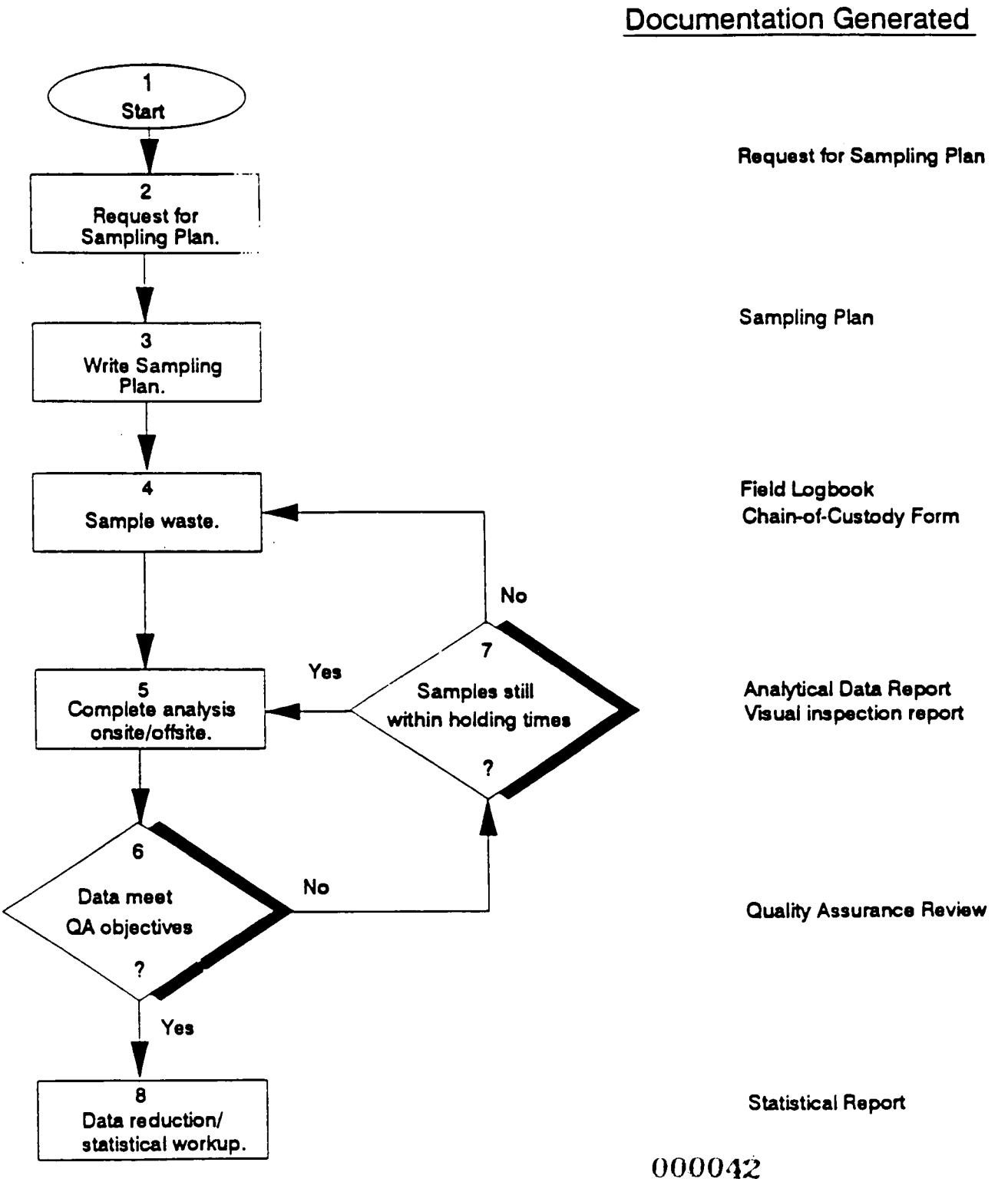
Identifying a listed hazardous waste is not based on chemical or physical characteritics of a waste, but on meeting a listing description. However, once identified as a listed hazardous waste, sampling and analysis results are generally required to demonstrate compliance with RCRA Land Disposal Restrictions rules. More information on statistical treatment of data is provided in Section 4.7.

In addition to the primary objectives identified above, the DQO process addresses several data quality indicators that support generation of data of known quality.

4.1.1 Representativeness

Regulatory standards for waste identification generally apply to a

Figure 4.0
Sampling & Analysis Process



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"representative sample of a waste" that exhibits, on average, the properties of the whole waste. To ensure representativeness, the FEMP utilizes statistical approaches for determining the number and location of samples to collect. Basic sampling approaches utilized at the FEMP are discussed in Section 4.2.

4.1.2 Accuracy

Overall sampling accuracy refers to the closeness of sample results to the true value for the population being sampled. Sampling accuracy is increased by selection of an appropriate sampling approach (See Section 4.2). Increasing sample size also tends to improve accuracy. Analytical accuracy may be measured in the laboratory by spiking waste samples with known concentrations of surrogate or similar compounds and comparing with reported results. This measure is one of the quality control attributes checked during the quality assurance review of analytical data.

4.1.3 Precision

Sampling precision provides a measure of the reproducability of results. Estimates of precision for sampling are generated by collecting duplicate samples from a single sampling location. Evaluation of duplicate samples provides the most useful information for media with continuous contaminant distributions (e.g., groundwater). Estimates of analytical precision are obtained by duplicate analysis of individual samples. Analytical precision is evaluated during the quality assurance review of data.

4.1.4 Sensitivity

Sensitivity refers to the ability of a sampling scheme to detect a parameter at a given level. Sensitivity is maintained during sampling by ensuring that samples are handled in a way that does not adversely affect any parameters of concerns during sample collecting or handling (e.g., volatilization of organics). Sample handling considerations are discussed in Section 4.4.6. Analytical sensitivity is generally expressed in terms of the method detection limit (MDL) for a given analytical method. The combination of analytical instrumentation and method must have sufficient sensitivity to detect analytes in a given waste matrix at or below the regulatory or other specified level. Required MDLs are specified for work

to be completed under the RCRA analytical support contracts. Attainment of the contract required detection limits is evaluated during review of analytical data to make a regulatory determination. Generally, analytical data with detection limits above the regulatory limit may not be used to support a determination that a waste is not regulated or meets a treatment standard.

4.1.5 Completeness

Completeness is a data quality indicator that is defined as the amount of collected and valid data compared to the planned amount. Completeness is often expressed in terms of a percentage. Completeness is a critical quality indicator when there is an expectation for a specified amount of sampling data (e.g., when a certain number of data points are required as inputs to a model). Completeness becomes a critical quality indicator for waste sampling when insufficient data are available to adequately characterize a waste (e.g., if sample variability is high, all data may be required to form a 90% confidence limit that falls below the regulatory level). Completeness is considered during decision making to determine if it adversely affects the decision to be made.

4.1.6 Comparability

Comparability is a quality indicator that is defined as the degree to which data sets can be considered similar and comparable. Comparability can also be a key quality indicator in establishing spatial or temporal correlations for similar waste streams (e.g., in evaluating similar waste streams from similar sources or a recurring waste streams from a single source over time). Comparability has been used at the FEMP in evaluating the performance of different laboratories analyzing a set of samples from the same waste stream.

4.2 Sampling Approaches

An appropriate sampling plan for waste collection must be responsive to both regulatory and scientific objectives. With those objectives clearly identified, a suitable sampling strategy, predicated on fundamental statistical concepts, is developed. Applied statistics is the science of employing techniques that allow the uncertainty of inductive inferences (general conclusions based on partial knowledge) to be evaluated. In accordance with EPA guidance (SW-846 "Test

Methods for Evaluating Solid Waste, Chapter Nine), waste characterization to determine regulatory status generally involves determining whether the mean (average) value of a particular parameter exceeds a regulatory threshold limit with a specified level of confidence. RCRA waste characterization requires comparison of a 90% confidence limit to the regulatory level to determine if a particular chemical contaminant is present in the waste at a hazardous level.

Waste characterization relies on collecting representative samples that exhibit, on average, the properties of the whole waste. Reliable estimates of the properties of the whole waste are dependent on the precision and accuracy of sampling. Sampling accuracy is dependent on collecting unbiased samples from the waste. Some form of random sampling is generally employed to meet this objective. There are three basic forms of random sampling: simple random sampling, stratified random sampling, and systematic random sampling. In cases where there is documented information regarding contaminant distributions in the waste, judgmental (authoritarian) sampling may provide the most reliable means of obtaining representative samples. Sampling precision is generally dependent on the number of samples collected. A minimum of two samples is needed to form an estimate of precision and variability.

The FEMP utilizes all three random sampling approaches and in some cases uses a hybrid approach which combines a random sampling scheme with a judgmental approach.

4.2.1 Simple Random Sampling

In simple random sampling, each unit in the population (e.g., container or element of a grid) has an equal chance of being sampled. Simple random sampling is the default random sampling strategy when there is little information about contaminant distribution and a rationale for alternate strategy does not exist. To randomly select units within the population, each unit is sequentially numbered and a random number generator (e.g., calculator program) or random number table is used to select the units to sample.

Simple random sampling is the basic approach adopted in FMPC-2185 "Sampling Plan for Drummed Waste at the FMPC." This approach is also frequently used in developing sampling plans to characterize project generated waste at the FEMP.

4.2.2 Stratified Random Sampling

Stratified random sampling is used when there is information that suggests that the waste stream can be divided into two or more strata which are similar in composition. Examples of information that may be used to identify strata within a waste stream include: 1) physical characteristics such as distinct phases or color patterns, 2) existing analytical data that indicate stratification, 3) identification of distinct batches or lots, and 4) dates of generation.

The FEMP employs stratified random sampling when there is evidence of strata that may have different contaminant distributions. For example, FMPC-2185 specifies that for containers with multiple phases a representative sample be collected from each phase in the container. Individual sampling plans developed for waste in other configurations (e.g., sumps or tanks) use stratified random sampling when appropriate.

4.2.3 Systematic Random Sampling

Systematic random sampling involves randomly selecting the first unit from a population to be sampled and selecting subsequent units at fixed time or space intervals. This approach ensures that samples selected are distributed more evenly across the waste stream and simplifies the process of selecting units to sample. Systematic random sampling can return poor results (in terms of accuracy and precision) when unrecognized trends or cycles exist in the waste stream and thus is not employed at the FEMP for waste streams in which such cyclic variability may exist (e.g., drummed process waste streams).

4.2.4 Judgmental Sampling

Judgmental (authoritarian) sampling contrasts with the random sampling schemes discussed above in that there is no randomization in sample selection. When the person selecting sample locations has knowledge of the waste and generating process, judgmental sampling can return results that are extremely accurate and precise. Supporting objective evidence is generally required to substantiate the validity of a judgmental sampling approach.

The FEMP utilizes sampling approaches based on random sampling schemes because judgmental sampling is more difficult to defend. In

certain cases, however, judgmental samples may be collected to augment the random sampling scheme. These samples are generally selected from areas with some objective evidence that indicates potential increased contaminant levels such as areas with stains or locations indicated by field screening instruments. The rationale for utilizing any judgmental sampling is provided in the sampling plan.

4.2.5 Number of Samples

Equation No. 8 in Chapter Nine of SW-846 provides one method for determining the appropriate number of samples to obtain required precision for evaluating wastes with respect to a threshold concentration criteria (e.g., toxicity characteristic constituent concentrations). Based on an estimate of parameter variance and mean concentration this equation yields the number of samples required to generate a 90% confidence limit (based on a one-tailed Student "t" Test) at the regulatory threshold. A minimum of two samples is required in any case to determine sample variability required to form the 90% confidence limit.

Without initial estimates of parameter variance and mean, alternate methods for determining an appropriate number of samples are employed. One generally accepted method for waste characterization is to sample a minimum of 10 percent of the waste. The key in undertaking this type of approach is identifying the "counting units" of which 10 percent will be selected. For example, for a waste stream comprised of a discrete set of drums, the individual drums may be identified as the counting units. This approach is used in FMPC-2185 "Sampling Plan for Drummed Waste at the FMPC" which establishes a schedule for determining the appropriate number of drums to sample to characterize the waste stream. When other methods of determining the appropriate number of samples are employed, a justification for using the alternate approach is documented in the sampling plan.

4.3 Request for Sampling & Analysis

To initiate development of a sampling plan for waste characterization FME completes a "Request for Sampling & Analysis" (Form 4.3). When the sampling plan is being developed to meet other project needs (e.g., to support a CERCLA program activity), FME coordinates with the project lead to ensure that the sampling plan meets both project and waste characterization objectives. The

REQUEST FOR SAMPLING & ANALYSIS

FORM SAMPREQ; Revision 1; 11/30/92
WCPFORM\SAMPREQ.FRM

PROJECT INFORMATION:

Requestor:	Phone:	Project Name:	MEF #:
PE/PM:	Phone:	Project/WO #:	SMS Request #:
Field Contact:	Phone:	Charge #:	Date Submitted:
Sample Plan Prepared By:	Phone:		Requested Completion Date:

SAMPLING PURPOSE:

__ RCRA Waste Characterization
__ RCRA Closure
__ Waste Confirmation
__ Treatability Study
__ CERCLA
__ Other

WASTE CONFIGURATION (at time of sampling):

__ Containerized (circle container type)

drum/pail - 5, 10, 20, 30, 55, 85, 110 gallon
White Metal Box, Wood Box, ISO Container (Sea/Land)

__ inventory information attached

__ tank/sump
__ building/structure
__ waste in process unit
__ pile
__ surface impoundment
__ landfill/soils in place

__ location/diagram/dimensions of unit attached

WASTE DESCRIPTION (lot marking, matrix, consistency, suspected contaminants, percent (volume) of total waste):

PARAMETERS FOR ANALYSIS:

(List sample matrix(ces) and identify parameters for each)	Analysis Group (See Reverse)								
	1	2	3	4	5	6	7	8	9
1)									
2)									
3)									
4)									
5)									

Analytical Support Level (ASL):	__ SW-846 (ASL C)	__ CLP SOW (ASL D)	Other, specify:_____

SAMPLING APPROACH:

__ Simple Random
__ Grid
__ Stratified Random
__ Grab
__ Systematic Random
__ Other

ADDITIONAL INSTRUCTIONS:

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CONCURRENCE:

PARAMETERS FOR ANALYSIS

FORM SAMPREQ, Revision 1, 11/30/92

GROUP 1 - TC Metals

__ Totals __ TCLP

__ arsenic
__ barium
__ cadmium
__ chromium
__ lead
__ mercury
__ selenium
__ silver

GROUP 2 - TC Pesticides

__ Totals __ TCLP

__ Endrin
__ Lindane
__ Methoxychlor
__ Toxaphene
__ 2,4-D
__ 2,4,5-TP Silvex
__ Chlordane
__ Heptachlor

GROUP 3 - TC VOAs

__ Totals __TCLP

__ benzene
__ carbon tetrachloride
__ chlorobenzene
__ chloroform
__ 1,2-dichloroethane
__ 1,1-dichloroethylene
__ methyl ethyl ketone
__ tetrachloroethylene
__ trichloroethylene
__ vinyl chloride

GROUP 4 - TC Semi-VOAs

__ Totals __ TCLP

__ o-cresol
__ m-cresol
__ p-cresol
__ cresol
__ dichlorobenzene
__ 2,4-dinitrotoluene
__ hexachlorobenzene
__ hexachlorobutadiene
__ hexachloroethane
__ nitrobenzene
__ pentachlorophenol
__ pyridine
__ 2,4,5-trichlorophenol
__ 2,4,6-trichlorophenol

GROUP 5 - F001 - F005 Solvent Constituents

__ acetone
__ benzene
__ carbon disulfide
__ carbon tetrachloride
__ chlorinated fluorocarbon
__ chlorobenzene
__ chloroethane
__ chloromethane
__ 1,1-dichloroethane
__ trans-1,2-dichloroethane
__ o-dichlorobenzene
__ 2-ethoxyethanol
__ ethyl acetate
__ ethyl benzene
__ ethyl ether
__ isobutanol
__ methanol
__ methyl isobutyl ketone (MIBK)
__ methyl ethyl ketone (MEK)
__ methylene chloride
__ nitrobenzene
__ 2-nitropropane
__ pyridine
__ tetrachloroethylene
__ toluene
__ 1,1,1-trichloroethane
__ 1,1,1-trichloro-1,2,2-trifluoroethane
__ trichlorofluoromethane
__ vinyl chloride
__ xylenes

000049

GROUP 6 - Rad

__ Cs 137
__ Np 237
__ Pu 238
__ Pu 239/240
__ Ra 226
__ Ra 228
__ Ru 106
__ Sr 90
__ Tc 99
__ Th Total
__ Th 228
__ Th 230
__ Th 232
__ U Total
__ U 234
__ U 235/236
__ U 238
__ Gross alpha/beta

GROUP 7 - Phys/Chem

__ Paint Filter Liquid Test (PFLT)

__ pH (if PFLT fails and filtrate is aqueous)
__ corrosivity toward steel (if PFLT fails and filtrate is nonaqueous)
__ flash point (if PFLT fails)

__ asbestos (__TEM, __EM, __PLM)

__ HSL
__ full __ extended __ abbrev.

GROUP 8 - ASTM Methods

__ commingling waste (ASTM D 5058)
__ cyanides in waste (ASTM D 5049)
__ sulfides in waste (ASTM D 4978)
__ pH of waste (ASTM D 4980)
__ physical description (ASTM D 4979)
__ oxidizers in waste (ASTM D 4981)
__ particle grain size (ASTM)

GROUP 9 - LDR

__ total organic carbon (TOC)
__ total suspended solids (TSS)
__ total organic halides (TOX)
__ PCBs
__ nickel
__ thallium

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request identifies the purpose of sampling and specifies the required parameters for analysis and Analytical Support Level (ASL) defined in the SCQ. Waste analysis is generally completed at ASL Level C, but may be upgraded to ASL Level D depending on the project needs. All waste analysis is *consistent* with the guidance provided in SW-846 "Test Methods for Evaluating Solid Waste."

4.4 Sampling Plan Development

Sampling plans are either developed by Environmental Monitoring (EM) or project staff at the FEMP. Sampling plans to support waste characterization are reviewed by FME prior to implementation (with the exception of implementing plans developed under FMPC-2185). The following sections describe the information generally contained or referenced in sampling plans at the FEMP.

4.4.1 Purpose/Objectives

The purpose for sampling and analysis (e.g., waste characterization for a specific waste stream) is identified in each sampling plan generated at the FEMP. The purpose may be discussed in greater detail in referenced project documentation (e.g., CERCLA Work Plans). The specific objectives related to sampling and analysis are stated in the sampling plan.

4.4.2 Organization and Responsibilities

Sampling plans may specifically identify organizational responsibilities or may rely on referenced SOPs to identify specific responsibilities.

4.4.3 Number/Location of Samples

The number and location of samples are identified in each sampling plan. For containerized waste, a list of selected containers is generally provided with inventory information. For waste in other configurations, text and/or a diagram may be provided to identify the location of specific samples to be collected. The sampling approach used for selecting samples and a brief discussion of the rationale for selecting the sampling approach is provided in the sampling plan.

4.4.4 Required Analyses/Sample Volumes

The parameters of concern for sampling are specified by the end user of

the data when sampling and analysis is requested. Page 2 of the "Request for Sampling and Analysis" lists the frequently required analyses for waste characterizations at the FEMP. Sample volumes are dictated by lab requirements for sample volume and specified requirements for Quality Control (QC) samples (e.g., duplicates, matrix spikes, and matrix spike duplicates).

4.4.5 Method of Waste Collection

The method for waste collection is dependent on a number of factors including:

- Sampling hazards (e.g., access to the waste stream),
- Physical form of the waste,
- Sample volume required,
- Maintaining sample integrity (e.g., cross-contamination, volatilization), and
- Ease of use and cleaning.

An appropriate sampling (or "extraction") methodology is selected and identified in the sampling plan. EM has developed a compendium of "Extraction Methodologies" that describe the protocol for using various equipment for collecting samples at the site. Directions for sample collection for drummed waste streams is specified in the procedure for drummed waste sampling at the FEMP (SOP 20-C-805).

4.4.6 Sample Handling

The FEMP has established procedures for sample handling from the time samples are collected in the field through delivery to the lab for analysis. These procedures address selection of sample containers, required preservations, and sample shipping.

Sample containers are specified in the sampling plan or referenced sampling procedure. Containers are selected to ensure that sample integrity is maintained with respect to the target analytes and method of analysis (i.e., to protect against addition or loss of constituents of concern from or through the sample container). Containers are also selected to hold required sample volume and withstand physical forces expected to

act on the sample during transport (i.e, break/leak resistant).

Required sample preservations are also specified in either the sampling plan or referenced sampling procedure. Samples for organic, inorganic, or metals analyses are kept at a constant temperature of 4°C. Additional preservations as required by analysis are also specified (e.g., acid preservation for metals).

Samples are packaged for transport to offsite contract laboratories from the sample processing lab at the FEMP. Samples are delivered to the sample processing lab from the field in appropriate containers (e.g., coolers for samples that must be kept cool) with required Chain-of-Custody documentation and prepared for shipment, per SAM-SS-002 "Shipping Samples to Offsite Laboratories."

4.4.7 Field Quality Control Samples

Field QC samples include trip blanks, field blanks and field duplicates. Field and trip blanks are prepared from analyte-free water. Field blanks are used to detect any added contamination from sampling equipment and the ambient sampling environment. Trip blanks are used to detect any added contamination that may be attributable to the shipping and handling of the sample containers. Field duplicates are replicate samples of a waste taken from the same sampling location but analyzed separately.

The number and type of field QC samples are specified in the sampling plan or referenced SOP.

4.4.8 Documentation and Sample Custody

The FEMP follows specific procedures to ensure that samples collected are traceable and defensible. These procedures define specific requirements for sample labels and seals, chain-of-custody records, and field log books.

Each sample container is labelled with the following information after collection: sample location, collector's name, type of material, type of sample, lot number/identification, date, time, and net weight. A chain-of-custody seal is also affixed to the sample container such that the container can not be opened without breaking the seal.

Chain-of-Custody records and analysis request sheets are completed for

collected samples according to procedure SAM-SS-002, "Chain of Custody and Request for Analysis." This documentation provides the means for demonstrating positive control of samples from the point of generation through analysis.

Field log books are kept for all sampling activities at the FEMP. The requirements for entries to the field log books are provided directly in the sampling plan, referenced as a procedure (e.g., EM-SM-004, "Field Logbook Procedure"), or specified in the field sampling procedure (e.g., SOP 20-C-805 "Sampling Drummed Waste for Hazard Identification").

4.4.9 Analytical Quality Control

Analytical QC samples provide information regarding the accuracy and precision of analytical methods employed to analyze FEMP wastes. QC samples include matrix spikes (MS), MS duplicates, matrix duplicates, surrogate spikes, and laboratory control samples. Requirements for analytical QC are specified in the laboratory procedures for completing analyses. For FEMP contract laboratories, the requirements for analytical QC are specified both in the contract scope of work (SOW) and in the contract laboratories implementing procedures. Copies of laboratory specific SOWs are available from Analytical Laboratory Project Oversight.

4.5 Lab Analysis

Analyses to support waste characterization are completed by both offsite contract laboratories and by the onsite laboratory at the FEMP. Before laboratories are utilized, they are evaluated to determine if they can support FEMP needs for data quality. The process for qualifying laboratories is provided in the SCQ along with a list of approved qualified laboratories.

4.6 Quality Assurance Review of Data Packages

Each laboratory supporting FEMP waste characterization generates a Quality Assurance/Quality Control (QA/QC) report that accompanies the analytical data package. QA/QC reports generated from offsite labs are reviewed by FEMP personnel using an offsite data review checklist. Onsite analytical data is verified via a cross check by a second data analyst and/or manager.

4.7 Statistical Treatment of Data

Once data have been reviewed and determined to be valid and meet DQOs summary statistics are developed for the data to support decision making. For decisions that require comparison with a regulatory threshold, a 90% confidence limit (based on a one-sided Student "t" Test) is formed.

4.7.1 Evaluation of Sample Distributions

The inferential calculations used to form the 90% confidence limit are based on the assumption that the population is approximately normally distributed. Two primary criteria for determining whether a population is normally distributed based on review of a sample set are:

1) Visual inspection of the data (i.e., a graph or plot of the data) and/or

2) Mathematical comparison of the values for the sample mean (x) and the sample standard deviation (s_x).

When the coefficient of variance is less than 1.25 (i.e., $s_x/x < 1.25$), the data may be assumed to be approximately normally distributed.

If this test indicates that the data are not normally distributed, then the following steps are taken in accordance with established guidance at the FEMP:

1) PK and the S&A effort are revisited to determine if the apparent distribution may be an artifact of S&A. Resampling may be necessary if this is deemed to be the case.

2) If the data correlate to an apparent stratification of the waste stream and this correlation is substantiated by PK, then the waste may be evaluated as a stratified waste stream.

3) If the data are determined to meet an alternate distribution profile, a data transformation and subsequent statistical evaluation may be performed (e.g., log-normal transformation followed by anti-log transformation of the 90% confidence limit).

4) If the transformation does not normalize the data, non-parametric approaches may be utilized to form the required 90% confidence limit.

5) Alternatively, additional samples may be collected to expand the number of data points representing the waste. This additional data provides a broader base with which to evaluate assumptions of normality.

4.7.2 Treatment of "Less Than" Values

In cases where the constituent concentration is expressed as "less than" the detection limit (DL), a value of 1/2 the DL is used as an input for statistical treatment. For data to be considered valid, however, the reported DL must be below the regulatory limit with which data are to be compared. This approach minimizes error in decision making (as opposed to using a value of zero or the actual DL in the decision making).

4.7.3 Treatment of Duplicate Analyses

Sample duplicate analyses are an integral part of SW-846 quality assurance protocol and are used to measure sampling performance in terms of precision (reproducability). A sample and its duplicate are designed to be equivalent (i.e., sampled and analyzed in precisely the same manner), therefore any distinction between a sample and its duplicate is arbitrary. For purposes of statistical treatment of data, the higher of the duplicate analyses for each constituent for a given sample is used for calculating statistics.

4.7.4 Forming the 90% Confidence Limit

Statistical treatment of data is performed by EM. A minimum of two sample points is required to form the 90% confidence limit in accordance with SW-846's Equation No. 6. A summary of sample results and sample statistics, including the 90% confidence limit, is prepared by EM and sent to FME for evaluation.

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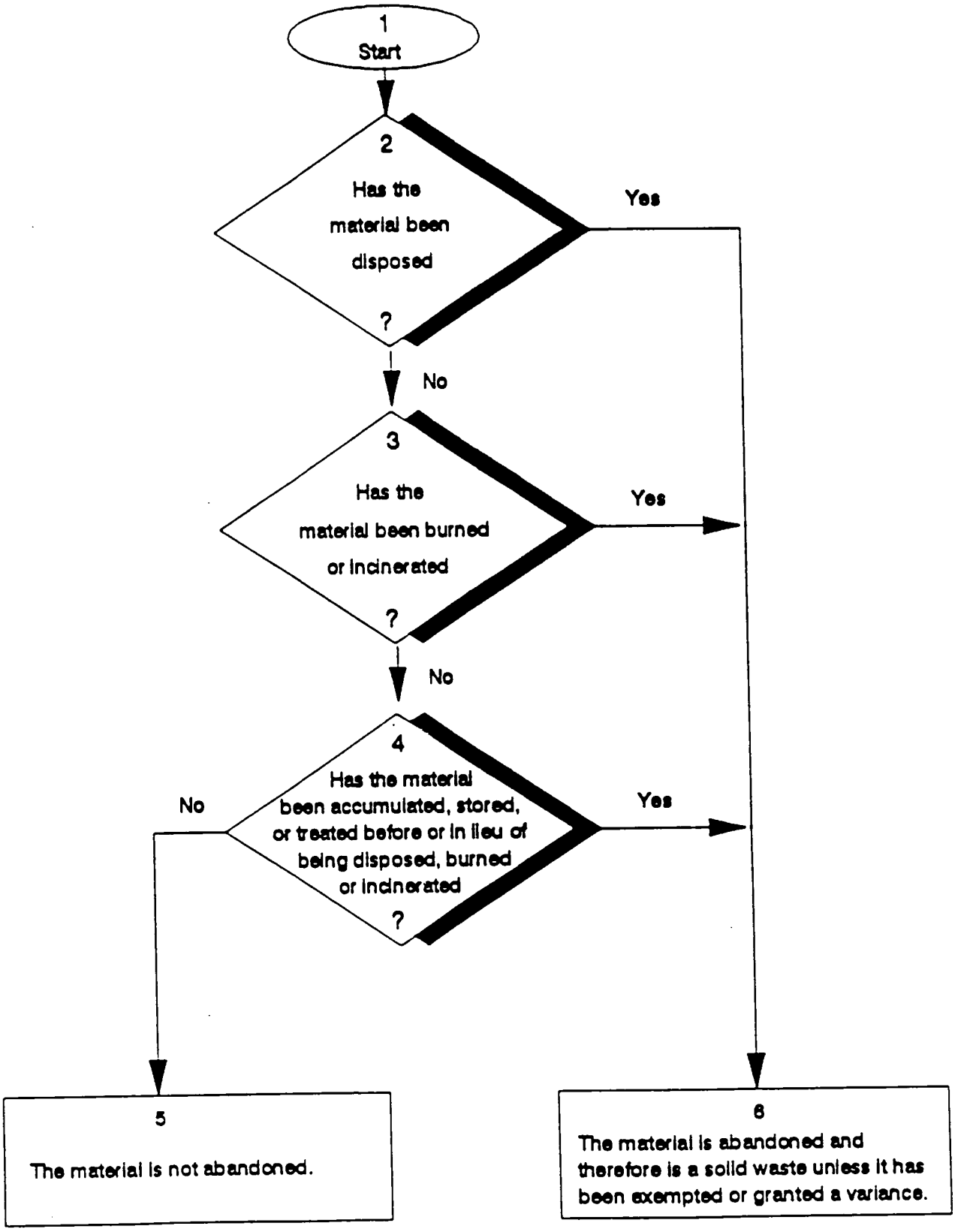
5.0 Solid Waste

This section provides the guidance and implementing procedures for identifying regulated (solid) waste at the FEMP. The determination of a materials status as a solid waste is extremely important since only materials that are regulated as (solid) waste are strictly regulated as hazardous waste under the hazardous waste management rules. Note that Ohio use the term "waste" in lieu of the term "solid waste" used in the federal RCRA regulations.

The approach for presenting the logic for identifying solid waste in the State of Ohio is adapted from the DOE Headquarters guidance "Definitions of Solid & Hazardous Waste" (August 1992). Modifications have been made to reference the Ohio Administrative Code (OAC) in lieu of the federal regulations (Code of Federal Regulations) for authorized portions of the Ohio Hazardous Waste Management Program. The "Hazardous Waste Rules Table" included in the full set of the OAC rules, Chapters 3745-49 through 3745-69, provides a means for correlating CFR references to the corresponding OAC rule.

Following the general guidance is specific guidance for evaluating solid waste at the FEMP. This site guidance provides the means to complete worksheets that document the status of FEMP materials with respect to the definition of solid waste. The worksheets focus on those parts of the regulations that bear directly on waste identification at the FEMP. Certain elements of the general guidance that are not readily applicable to FEMP operations are shaded and may be reviewed with less scrutiny.

Figure 5.1
Abandoned Materials



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5.1 Abandoned Materials

Step 1 The definition of a solid waste is provided in OAC 3745-51-02. A material is a solid waste if it is discarded material, that has not been excluded under OAC 3745-51-04(A) or granted a variance under OAC 3745-50-311 and 312 under certain conditions. Discarded material is defined as any material that is abandoned, recycled or considered inherently waste-like. **Abandonment** is addressed in this section. OAC 3745-51-02(A).

Step 2 OAC 3745-51-02(B)(1). Under OAC 3745-50-10, disposal is defined as the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

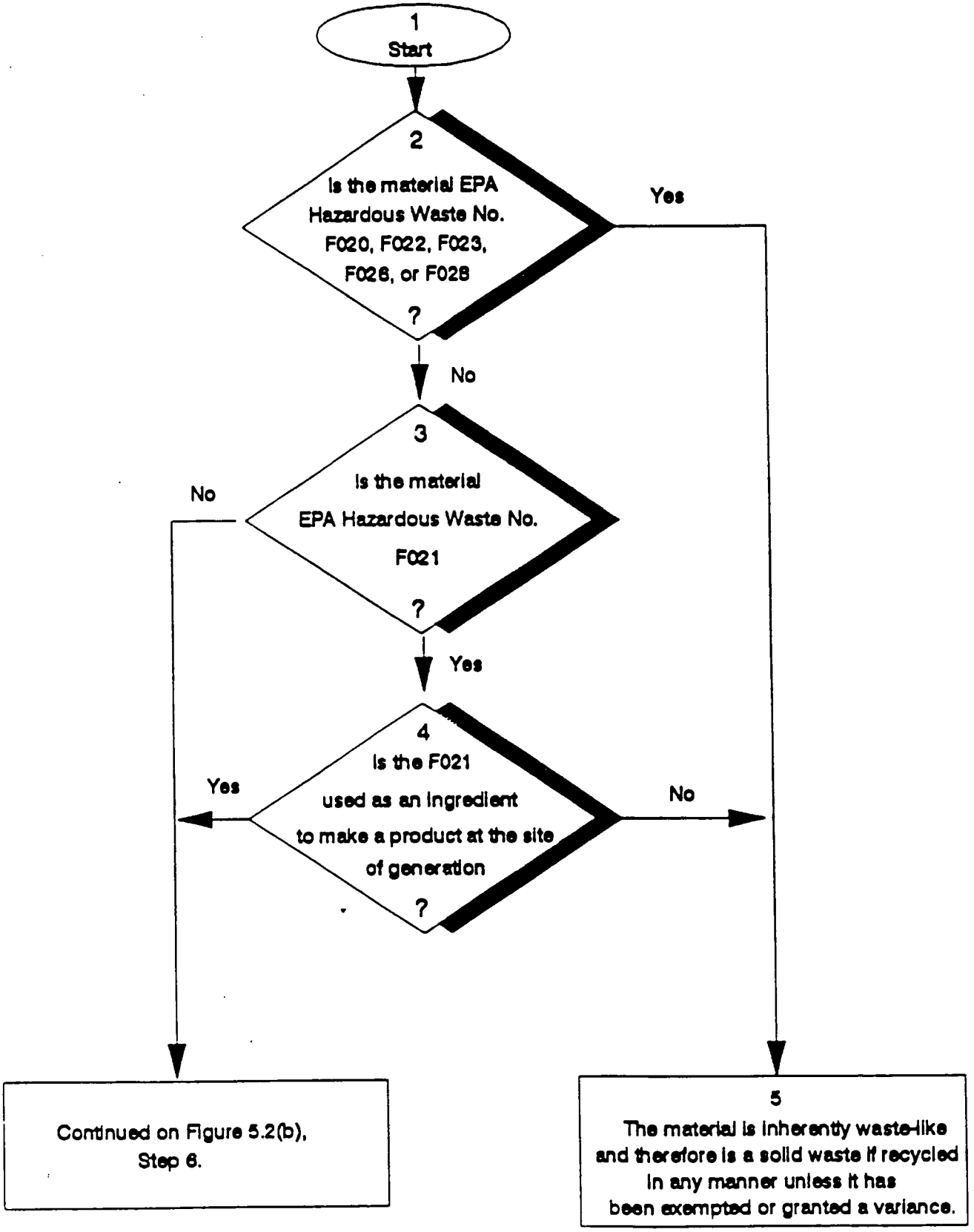
Step 3 OAC 3745-51-02(B)(2). EPA emphasizes that this applies whether or not burning is for energy recovery (50 FR 627, 1/4/85).

Step 4 This applies if the material has not been recycled. OAC 3745-51-02(B)(3).

Step 5 A material that has not been abandoned may still be discarded (and a solid waste) if it is inherently waste-like or is recycled in certain ways. Inherently waste-like materials are addressed in Section 5.2. Recycled materials are addressed in Section 5.3.

Step 6 The material is a solid waste unless it has been exempted under (OAC 3745-51-04(A) or has been granted a variance under OAC 3745-50-311 or 312 . Exemptions and variances are addressed in Section 5.4.

Figure 5.2(a)
Inherently Waste-Like Materials



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5.2 Inherently Waste-Like Materials

Step 1 **Start.** To be a solid waste, as defined at OAC 3745-51-02, a material must be discarded. Discarded material is defined as any material that is abandoned, recycled under certain conditions or inherently waste-like. **Inherently waste-like** materials are solid wastes if they are recycled in any manner. OAC 3745-51-02(D).

SPECIFIC WASTES

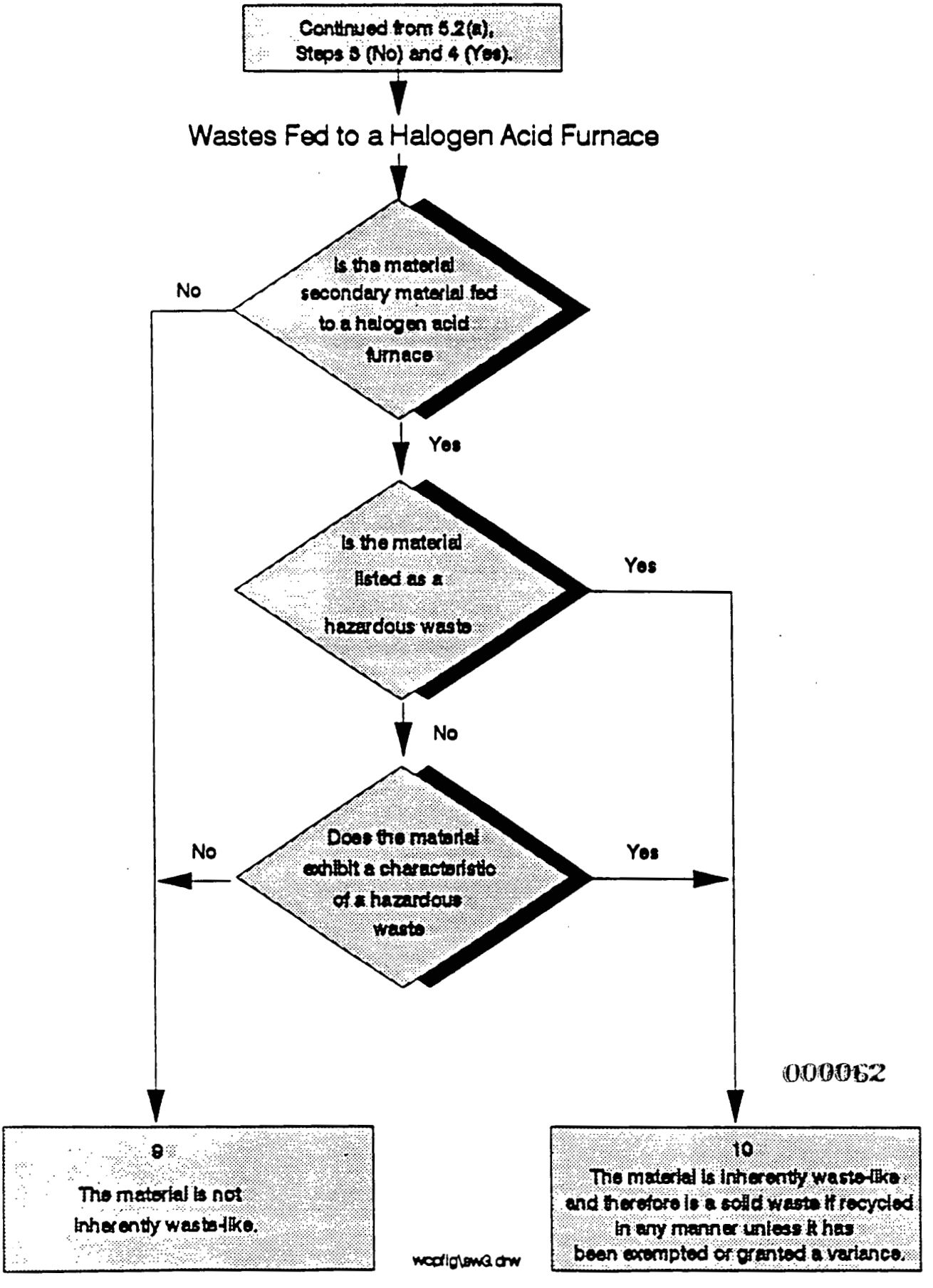
Step 2 F020, F022, F023, F026 and F028 are described under OAC 3745-51-31. They include wastes from the production of certain phenols and chlorobenzenes, and residues resulting from the incineration or thermal treatment of solids contaminated with these wastes. OAC 3745-51-02(D)(1). By definition, these materials are both solid wastes and hazardous wastes under OAC 3745-51-02(D)(1).

Step 3 F021 is described at OAC 3745-51-31 as wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.

Step 4 Pentachlorophenol production plants typically reuse these materials in their own production processes. F021 is a solid waste if recycled in any other way (50 FR 637, 1/4/85). OAC 3745-51-02(D)(1).

Step 5 The material is a solid waste if recycled in any manner unless it has been exempted under OAC 3745-51-04(A) or granted a variance under OAC 3745-50-311 or 312. Exemptions and variances are addressed in Section 5.4.

Figure 5.2(b)



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5.2 Inherently Waste-Like Materials (cont.)

WASTES FED TO A HALOGEN ACID FURNACE

Step 6 Secondary materials listed as hazardous waste under Subpart C or D of 40 CFR 261 (explained below) are inherently waste-like when fed to a halogen acid furnace (HAF). "The wastes burned by HAFs are some of the most toxic generated and regulation of emissions from burning these wastes certainly is needed to protect human health and the environment" (56 FR 7141, 2/21/91). (40 CFR 261.2(d)(2)) NOTE: No OAC rule yet promulgated for this non-HSWA federal provision so this rule is not effective in Ohio yet.

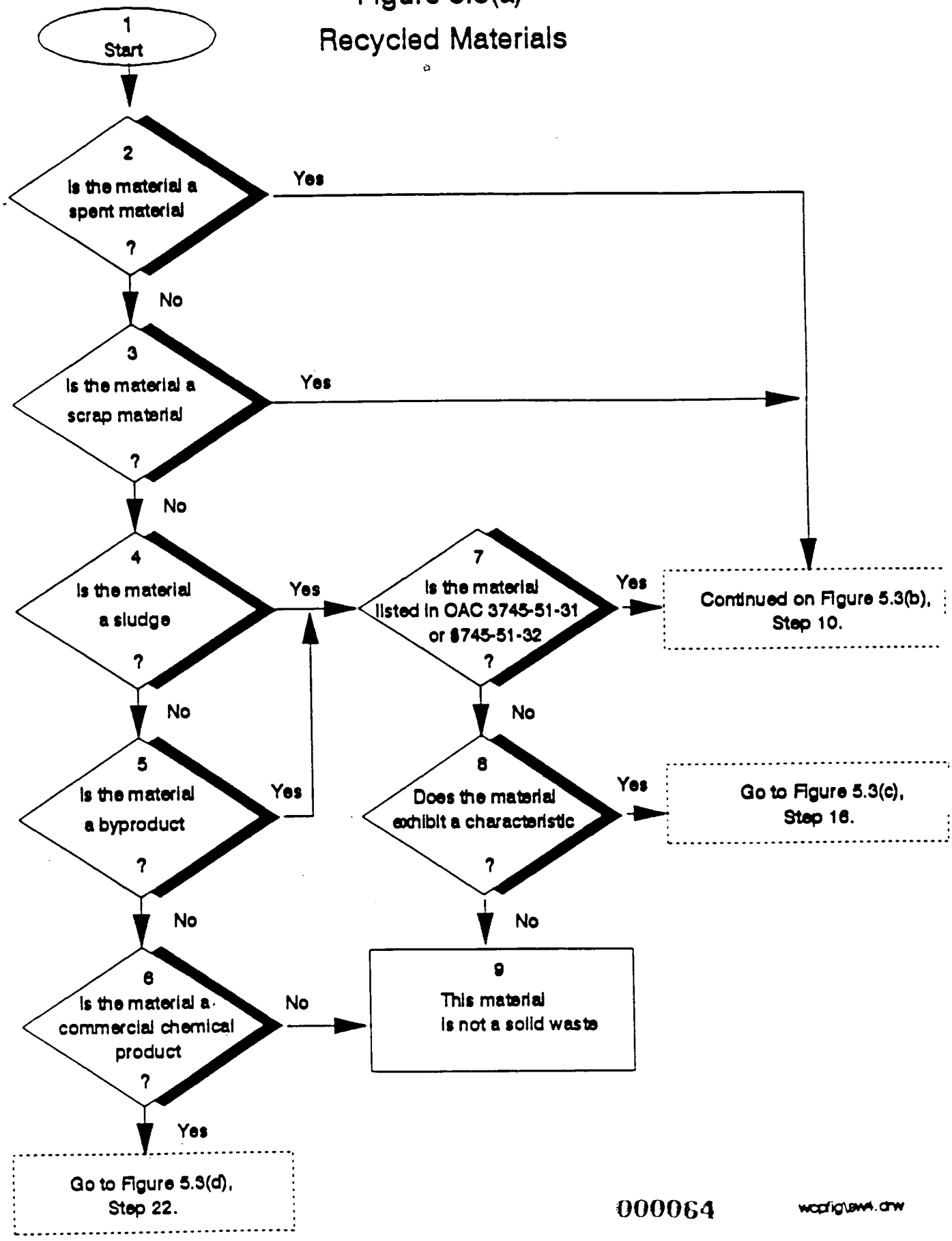
Step 7 As defined in Subpart D of Part 261. Listed hazardous wastes are generated from certain processes or are certain discarded commercial chemical products. Detailed information describing listed hazardous wastes is found in Section 6.1. (40 CFR 261.2(d)(2))

Step 8 As defined in Subpart C of Part 261. A characteristic hazardous waste exhibits ignitability, corrosivity, reactivity, or toxicity. Detailed information describing characteristic hazardous wastes is found in Section 6.2. (40 CFR 261.2(d)(2))

Step 9 A material that is not inherently waste-like may still be discarded (and a solid waste) if it is abandoned or recycled. Abandoned materials are addressed in Section 5.1. Recycled materials are addressed in Section 5.3.

Step 10 The material is a solid waste if recycled in any manner unless it has been exempted under 261.4(a) or granted a variance under 260.30 and 260.31. Exemptions and variances are addressed in Section 5.4.

Figure 5.3(a)
Recycled Materials



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5.3 Recycled Materials

Step 1 Certain materials are solid wastes when involved in certain types of recycling activities. These five materials are addressed in Steps 2 through 6 below. For the purposes of the regulations, a material cannot fall in more than one of these five categories.

Step 2 **Spent Material** is defined at OAC 3745-51-01(C)(1) as any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing. OAC 3745-51-02(C) Table 1.

Step 3 **Scrap metal** is defined at OAC 3745-51-01(C)(6) as bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled. OAC 3745-51-02(C) Table 1.

Step 4 **Sludge** is defined at OAC 3745-50-10 as any solid, semi-solid or liquid waste generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plat. OAC 3745-51-02(C) Table 1.

Step 5 **Byproduct** is defined at OAC 3745-51-03(C)(3) as a material that is not one of the primary products and is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process. OAC 3745-51-02(C) Table 1.

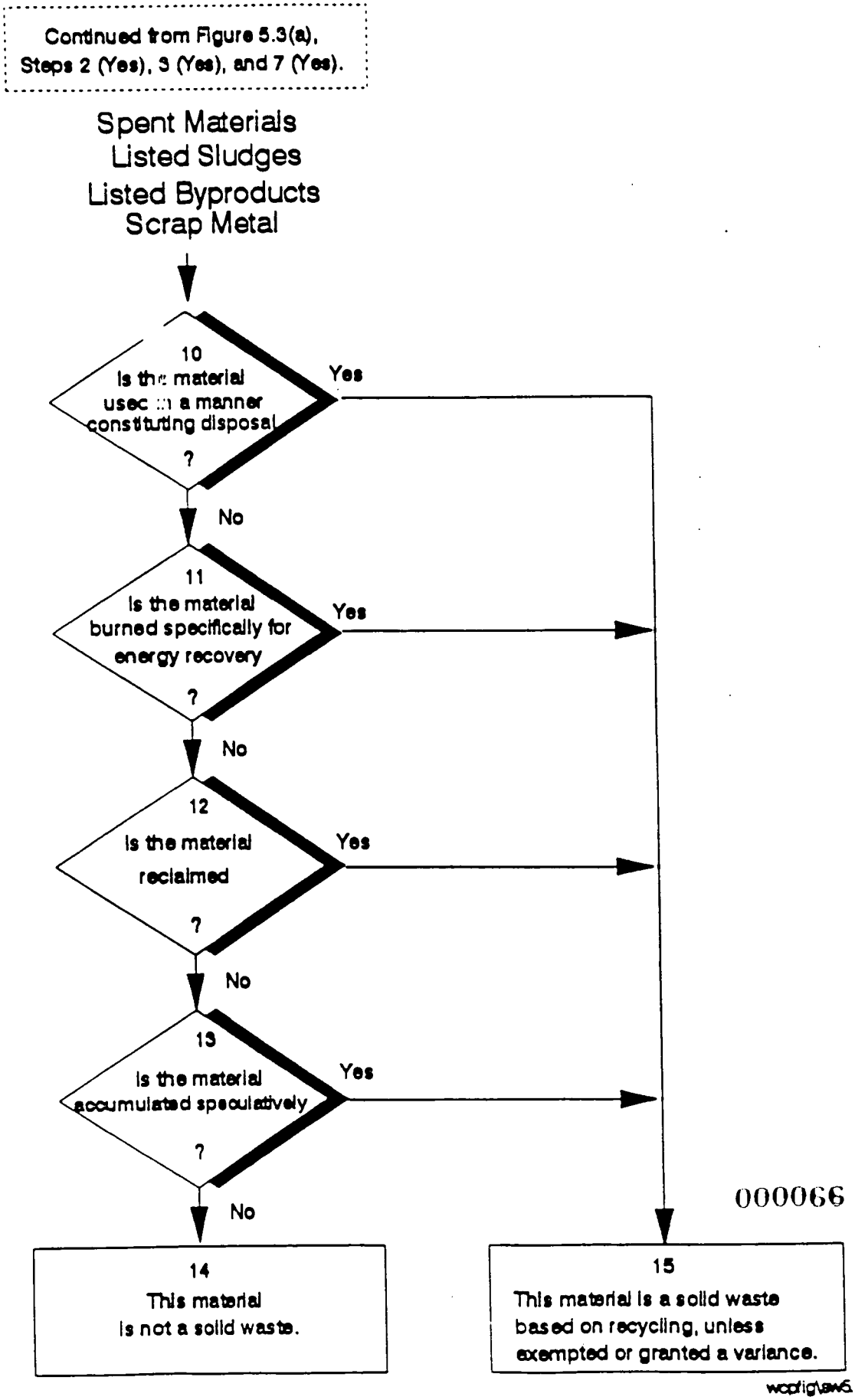
Step 6 **Commercial chemical product** is defined at OAC 3745-51-33, with manufacturing chemical intermediates; as a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. Listed commercial chemical products are found at OAC 3745-51-33(E)-(F). OAC 3745-51-02(C)Table 1.

Step 7 Sludges and byproducts containing listed wastes are treated differently from those that contain characteristic wastes. OAC 3745-51-02(C) Table 1.

Step 8 "Characteristic" refers to the four hazardous waste characteristics: ignitability, corrosivity, reactivity, and toxicity. These characteristics are defined in OAC 3745-51-21 to 24 and discussed in Section 6.2 of this document.

Step 9 This means that the recycling of this material does not render it a solid waste. However, it would still be a solid waste if abandoned or inherently waste-like, as explained in Sections 5.1 and 5.2. OAC 3745-51-02(C) Table 1.

Figure 5.3(b)



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5.3 Recycled Materials (cont.)

SPENT MATERIALS, LISTED SLUDGES, LISTED BYPRODUCTS, SCRAP METAL

Step 10 This applies to materials that are:

- Applied to or placed on the land for a particular use (such as dust suppressions) in a manner that constitutes disposal; or
- Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land (in which cases the product itself is a solid waste). OAC 3745-51-02(C)(1)(a).

This includes materials accumulated, stored or treated before being used in a manner constituting disposal. OAC 3745-51-02(C).

Step 11 This includes materials that are used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself is a solid waste). OAC 3745-51-02(C)(2)(a). This also includes materials accumulated, stored or treated before being burned specifically for energy recovery. OAC 3745-51-02(C).

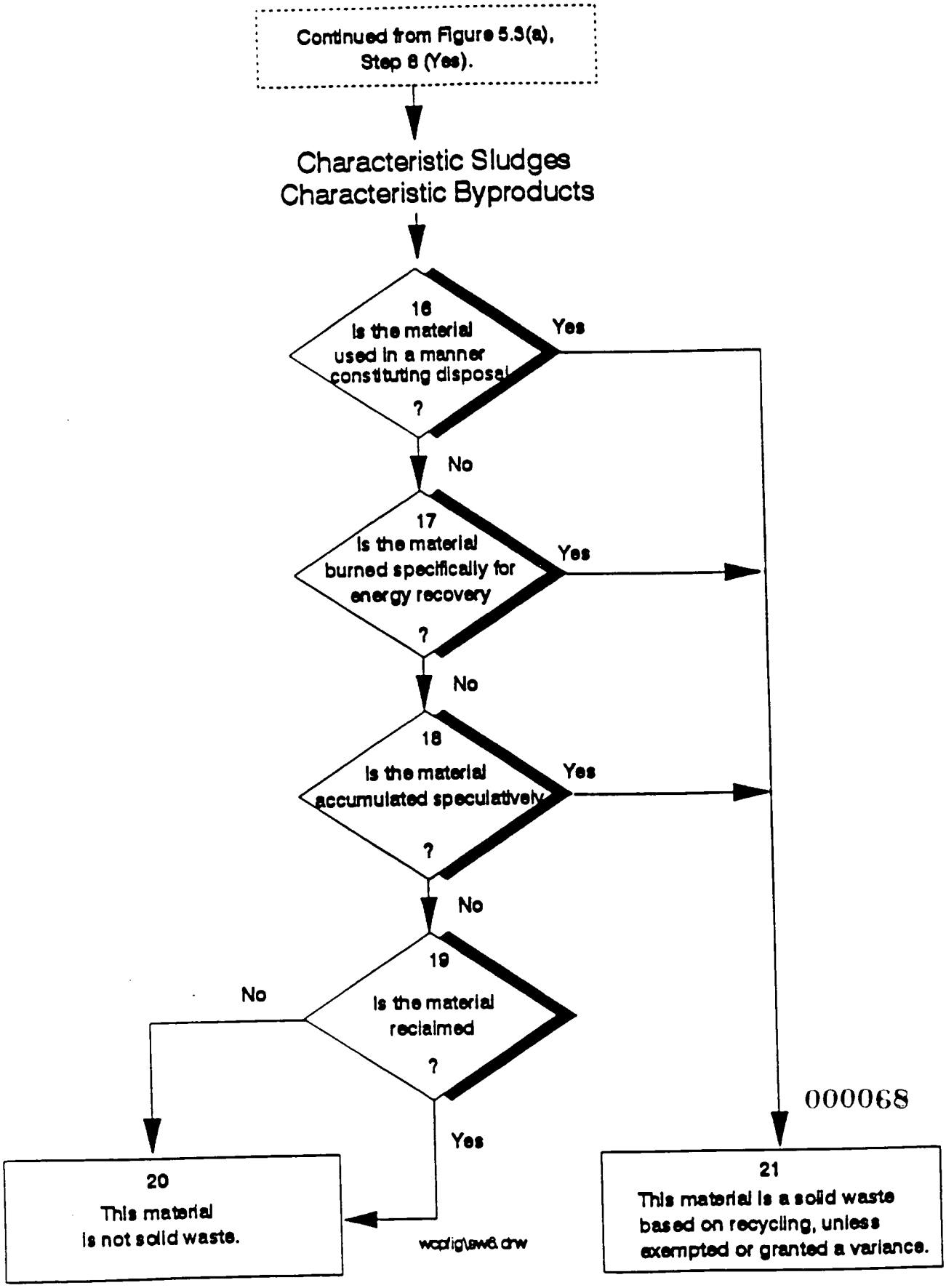
Step 12 **Reclaimed** is defined under OAC 3745-51-01(C)(4). A material is reclaimed if it is processed to recover a usable product or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents. This step includes materials that are accumulated, stored or treated before being reclaimed. OAC 3745-51-02(C).

Step 13 **Accumulated speculatively** is defined under OAC 3745-51-01(C)(8). A material is accumulated speculatively if it is accumulated before being recycled. A material is <u>not</u> accumulated speculatively if the material is potentially recyclable and has a feasible means of being recycled; in addition, during the calendar year, at least 75 percent of the accumulated amount must be recycled. OAC 3745-51-02(C)(4) and 3745-51-01(C)(3). This step includes materials that are accumulated, stored or treated before being reclaimed.

Step 14 The material is not a solid waste based on recycling of a secondary material. It would still be a solid waste if abandoned or inherently waste-like, as explained in Sections 5.1 and 5.2.

Step 15 The material is a solid waste unless it has been exempted under OAC 3745-51-04(A) or has been granted a variance under OAC 3745-50-311 or 312. Exemptions and variances are addressed in Section 5.4. OAC 3745-51-02(C).

Figure 5.3(c)



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5.3 Recycled Materials (cont.)

CHARACTERISTIC SLUDGES, CHARACTERISTIC BYPRODUCTS

Step 16 This applies to materials that are:

- Applied to or placed on the land for a particular use (such as dust suppression) in a manner that constitutes disposal; or
- Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land (in which cases the product itself remains a solid waste). OAC 3745-51-02(C)(1)(a).

This includes materials accumulated, stored or treated before being used in a manner constituting disposal. OAC 3745-51-02(C).

Step 17 This includes materials that are used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself is a solid waste). OAC 3745-51-02(C)(2)(a). This also includes materials accumulated, stored or treated before being burned specifically for energy recovery. OAC 3745-51-02(C).

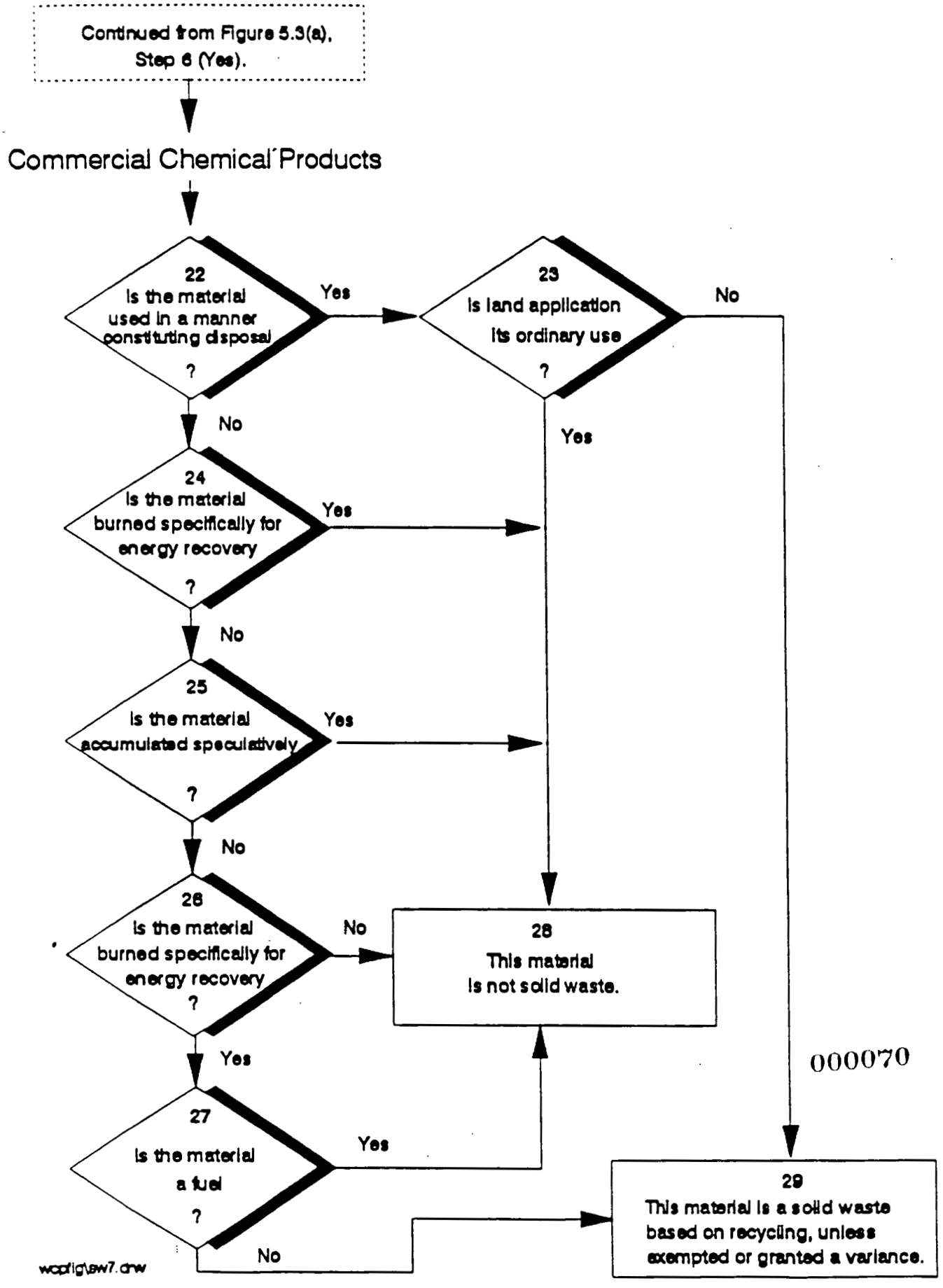
Step 18 **Accumulated speculatively** is defined under OAC 3745-51-01(C)(8). A material is accumulated speculatively if it is accumulated before being recycled. A material is <u>not</u> accumulated speculatively if the material is potentially recyclable and has a feasible means of being recycled; in addition, during the calendar year, at least 75 percent of the accumulated amount must be recycled. OAC 3745-51-02(C)(4) and 3745-51-01(C)(8). This includes materials that are accumulated, stored or treated before being accumulated speculatively. OAC 3745-51-02(C).

Step 19 **Reclaimed** is defined under OAC 3745-51-01(C)(4). A material is reclaimed if it is processed to recover a usable product or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents. OAC 3745-51-02(C)(3). This step includes materials that are accumulated, stored or treated before being reclaimed. OAC 3745-51-02(C). These characteristic sludges and byproducts are not solid wastes because they were not recycled by the above three methods, and are not solid wastes when reclaimed. (Material that is accumulated speculatively <u>prior to</u> being reclaimed is a solid waste.)

Step 20 The material is not a solid waste based on recycling of a secondary material. (Secondary material is any material that potentially can be a solid or hazardous waste when recycled). It would still be a solid waste if abandoned or inherently waste-like, as explained in Sections 5.1 and 5.2.

Step 21 The material is a solid waste unless it has been exempted under OAC 3745-51-04(A) or has been granted a variance under OAC 3745-50-311 or 312. Exemptions and variances are addressed in Section 5.4. OAC 3745-51-02(C).

Figure 5.3(d)



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5.3 Recycled Materials (cont.)

COMMERCIAL CHEMICAL PRODUCTS

Step 22 This applies to materials that are:

- Applied to or placed on the land for a particular use (such as dust suppression) in a manner that constitutes disposal; or
- Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land (in which cases the product itself remains a solid waste). OAC 3745-51-02(C)(1)(a).

This includes materials accumulated, stored or treated before being used in a manner constituting disposal. OAC 3745-51-02(C).

Step 23 This means that if the material is normally produced for the purpose of applying it to the land, then it is not a solid waste. OAC 3745-51-02(C)(1)(b).

Step 24 **Reclaimed** is defined under OAC 3745-51-01(C)(4). A material is reclaimed if it is processed to recover a usable product or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents. OAC 3745-51-02(C)(3). This step includes materials that are accumulated, stored or treated before being reclaimed. OAC 3745-51-02(C).

Step 25 **Accumulated speculatively** is defined under OAC 3745-51-02(C)(8); it is accumulated speculatively if accumulated before being recycled. A material is <u>not</u> accumulated speculatively if the material is potentially recyclable and has a feasible means of being recycled. During the calendar year, at least 75% of the accumulated amount must be recycled. OAC 3745-51-02(C)(4) and (8). Includes materials that are accumulated, stored or treated before being accumulated speculatively. OAC 3745-51-02(C).

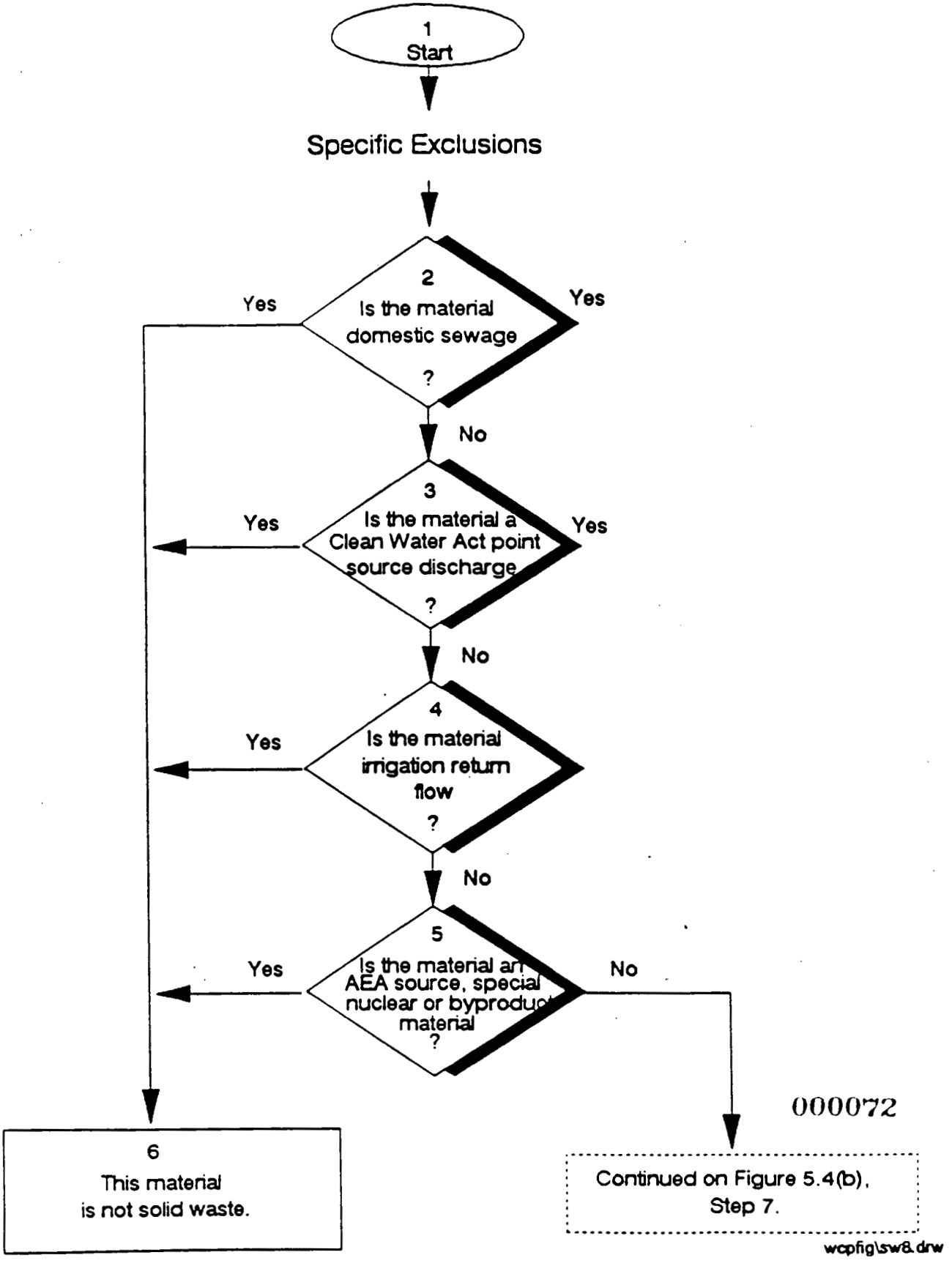
Step 26 Includes materials that are used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself is a solid waste). OAC 3745-51-02(C)(2)(a). Also includes materials accumulated, stored or treated before being burned specifically for energy recovery. OAC 3745-51-02(C).

Step 27 This means that if the material is normally produced for use as fuel, then it is not a solid waste. OAC 3745-51-02(C)(2)(b).

Step 28 This means that the recycling of this material does not render it a solid waste. However, it would still be a solid waste if abandoned or inherently waste-like, as explained in Sections 5.1 and 5.2. OAC 3745-51-02(C).

Step 29 The material is solid waste unless it has been exempted under OAC 3745-51-04(A) or has been granted a variance under 3745-50-311 or 312. Exemptions and variances are addressed in Section 5.4. OAC 3745-51-02(C).

Figure 5.4(a)
Solid Waste Exclusions



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5.4 Solid Waste Exclusions

Step 1 **Start.** A solid waste is any discarded material that is not excluded by OAC 3745-51-04(A) or by variance granted under OAC 3745-50-311 or 312. OAC 3745-51-02(A)(1). Materials that otherwise meet the definition of solid waste may be excluded from the definition under OAC 3745-51-04(A).

SPECIFIC EXCLUSIONS

Step 2 This includes any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. **Domestic sewage** means untreated sanitary wastes that pass through a sewer system. OAC 3745-51-04(A)(1)(a) and (b).

Step 3 This is, specifically, industrial wastewater discharges subject to regulation under section 402 of the Clean Water Act, as amended. This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated. Nor does it exclude sludges generated by industrial wastewater treatment. OAC 3745-51-04(A)(2).

Step 4 The statutory definition of solid waste (section 1004(27)) specifically excludes solid or dissolved materials in irrigation return flows. OAC 3745-51-04(A)(3).

Step 5 **AEA** is the Atomic Energy Act of 1954, as amended 42 U.S.C. 2011 *et seq.* (40 CFR 261.4(a)(4)). Definitions of these materials are summarized below:

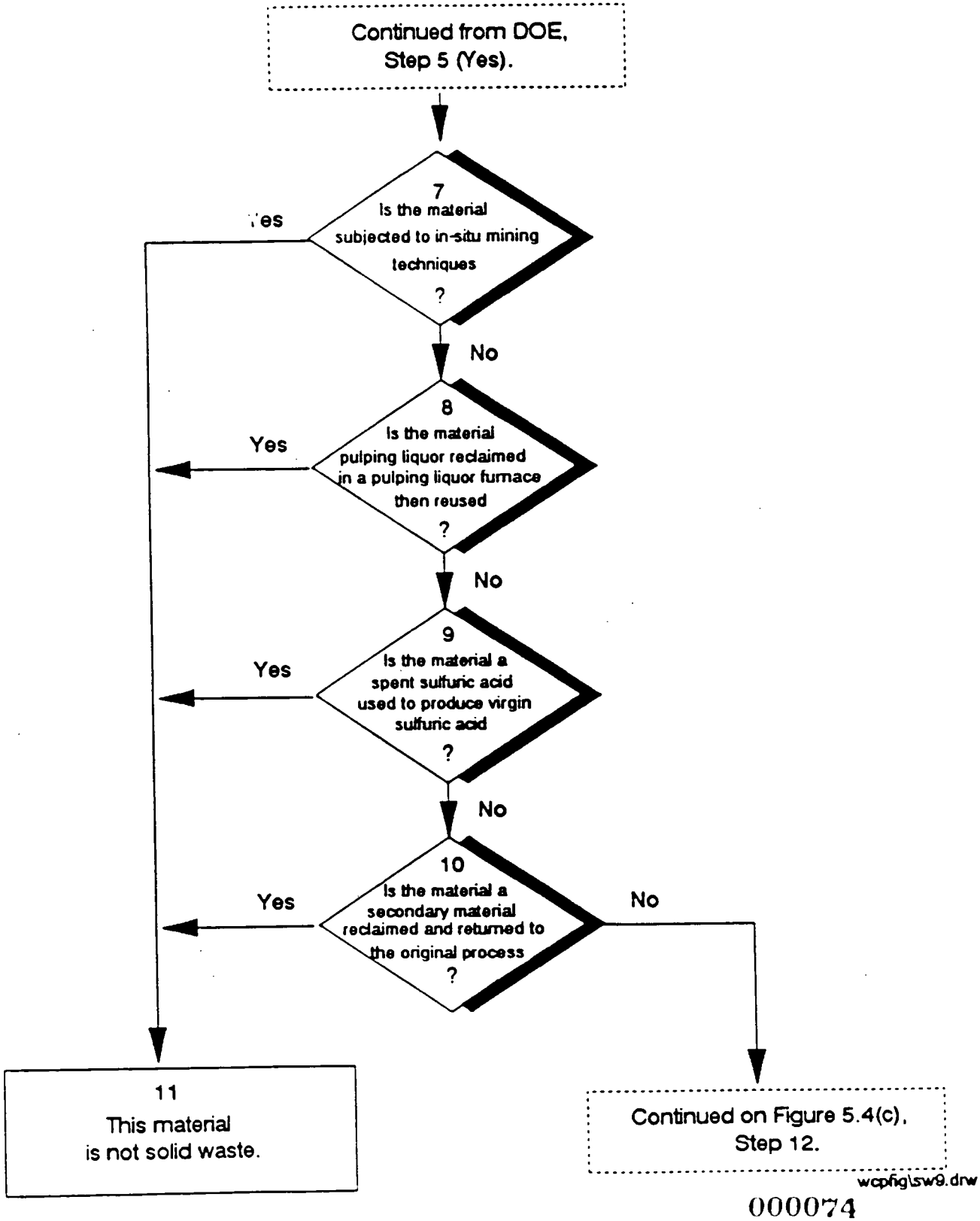
- **Source material:** (1) uranium, thorium, or any other material determined by the Atomic Energy Commission to be source material; or (2) ores containing one or more of the foregoing materials, in such concentrations as the Commission may determine. (42 U.S.C. 2014(z))
- **Special nuclear material:** (1) Plutonium, uranium enriched in the isotope 233 or 235, and any other material which the Atomic Energy Commission determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, excepting source material. (42 U.S.C. 2014(aa))
- **Byproduct material:** Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear materials. (42 U.S.C. 2014(e))

If these materials are mixed with a hazardous waste, as defined in Section 6.0, the hazardous waste component is still regulated under RCRA (51 FR 24504, 7/3/86; DOE Order 5820.2A).

Step 6 The exclusion under §261.4(a) applies. Because the material is not a solid waste, it cannot be hazardous waste and no further steps in Sections 5.0 and 6.0 apply.

NOTE: The OAC regulations do not have a corresponding exclusion from the *definition of solid waste*. The Ohio rules do, however, provide an exclusion from the *definition of hazardous waste* for the radionuclide portion of mixtures of hazardous waste and AEA materials at OAC 3745-51-03(D).

Figure 5.4(b)



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5.4 Solid Waste Exclusions (cont.)

Step 7 These are materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process. OAC 3745-51-04(A)(4).

Step 8 This exclusion applies to pulping liquors (i.e., black liquor) that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process, unless it is accumulated speculatively. OAC 3745-51-04(A)(5). "Reclaimed", "reused" and "accumulated speculatively" are defined at OAC 3745-51-01(C).

Step 9 This applies unless the acid is accumulated speculatively. OAC 3745-51-04(A)(6). "Accumulated speculatively" is defined at OAC 3745-51-01(C).

Step 10 This applies to secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided:

(a) Only tank storage is involved, and the entire process through completion of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance;

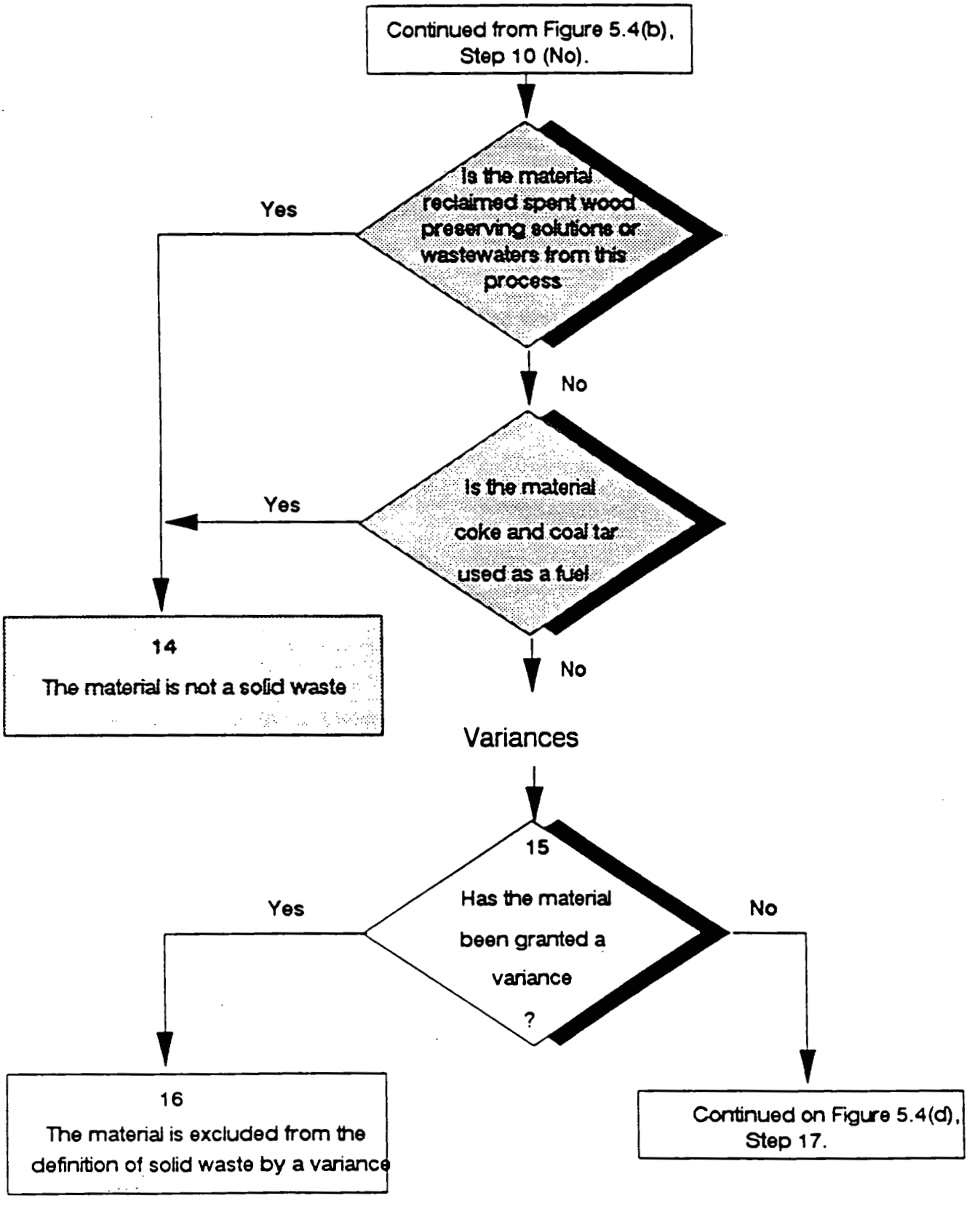
(b) Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);

(c) The secondary materials are never accumulated in such tanks for over twelve months without being reclaimed; and

(d) The reclaimed material is not used to produce a fuel, or used to produce products that are used in a manner constituting disposal. OAC 3745-51-04(A)(7).

Step 11 The exclusion under OAC 3745-51-04 applies. Because the material is not a solid waste, it cannot be a hazardous waste and no further steps of the flowcharts in Sections 5.0 and 6.0 apply.

Figure 5.4(c)



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5.4 Solid Waste Exclusions (cont.)

Step 12 This applies if the solutions have been reclaimed and are reused for their original intended purpose. (40 CFR 261.4(a)(9)). NOTE: Ohio has not yet promulgated OAC rules to provide this exclusion.

Step 13 This applies to coke and coal tar from the iron and steel industry that contains or is produced from decanter tank tar sludge, EPA Hazardous Waste K087. The process of producing coke and coal tar from such decanter tank tar sludge in a coke over is likewise excluded from regulation. (40 CFR 261.4(a)(10)). NOTE: Ohio has not yet promulgated OAC rules to provide for this exclusion.

Step 14 The exclusion under 40 CFR 261.4(a) applies. NOTE: Ohio has not yet promulgated OAC rules to provide for these exclusions.

VARIANCES

Step 15 A solid waste is any discarded material that is not excluded by OAC 3745-51-04(A) or by a variance granted under OAC 3745-50-311 or 312. OAC 3745-51-02(A)(1).

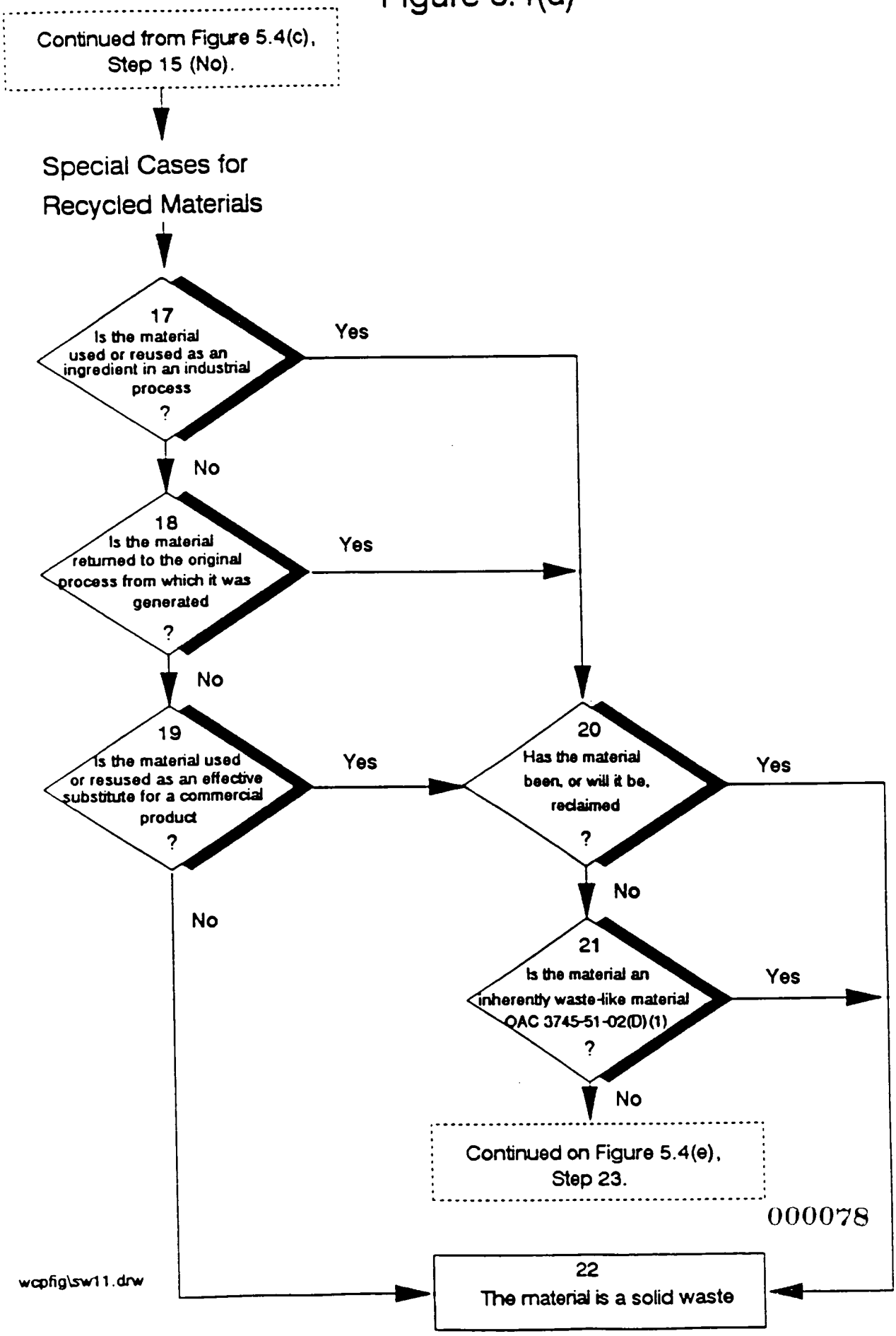
Under OAC 3745-50-311 the Director of Ohio EPA may grant variances from classification as a solid waste for materials that:

- are accumulated speculatively without sufficient amounts being recycled; or
- are reclaimed and then reused within the original primary production process in which they were generated; or
- have been reclaimed but must be reclaimed further before the materials are completely recovered.

OAC 3745-50-312 lists the standards and criteria that will be used for granting such variances. OAC 3745-50-312.

Step 16 Because the material is not a solid waste, it cannot be a hazardous waste and no further steps of the flowcharts in Sections 5.0 and 6.0 apply.

Figure 5.4(d)



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5.4 Solid Waste Exclusions (cont.)

SPECIAL CASES FOR RECYCLED MATERIALS

Step 17 This applies provided the materials are not being reclaimed. **Used** or **reused** is defined under OAC 3745-51-01(C)(5). A material is used or reused if it is either (1) employed as an ingredient in an industrial process to make a product; or (2) employed in a particular function or application as an effective substitute for a commercial product. OAC 3745-51-02(E)(1)(a).

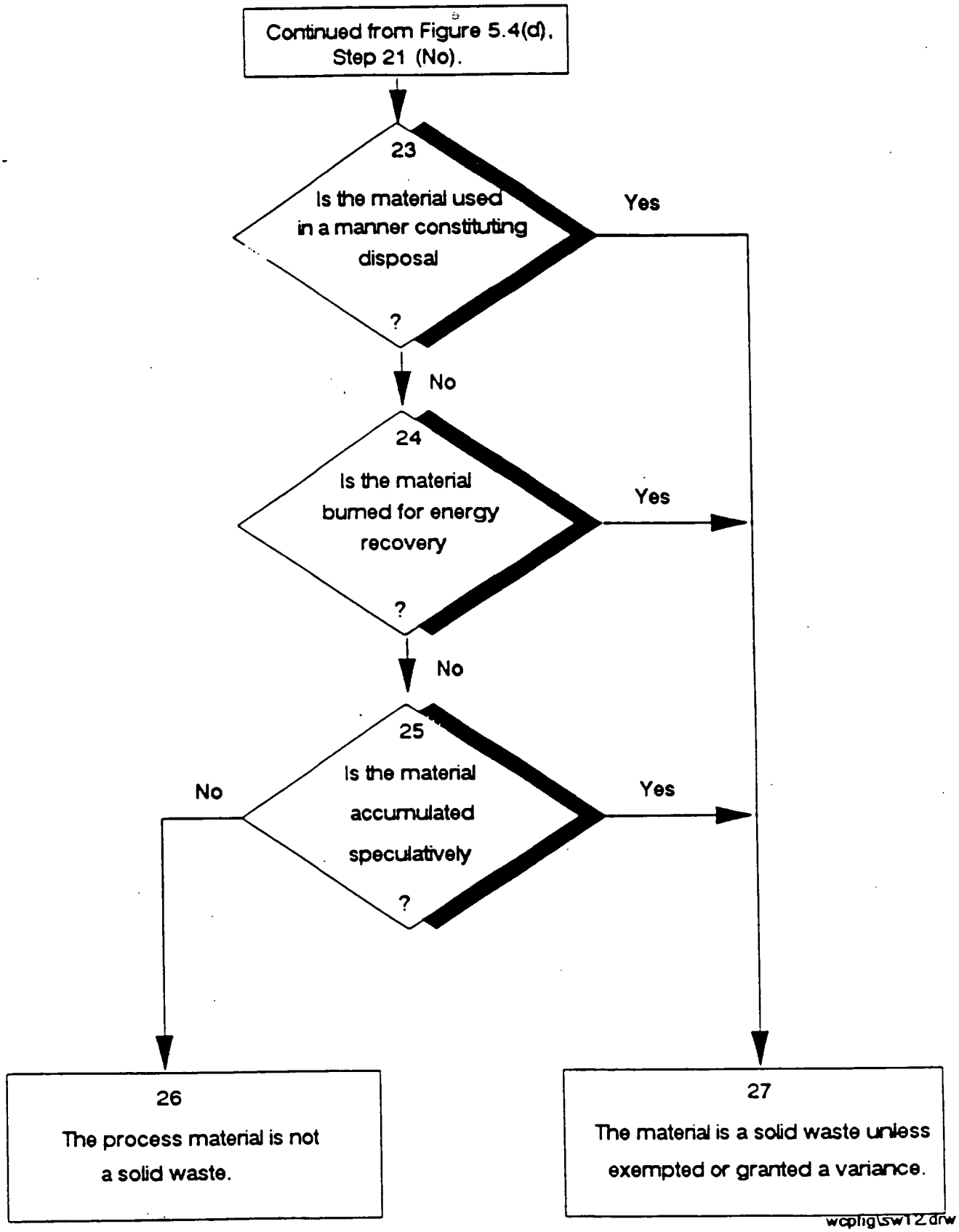
Steps 18 & 20 The material must be returned as a substitute for raw material feedstock and the process must use raw materials as principal feedstocks. The material must not have been reclaimed first. OAC 3745-51-02(E)(1)(c).

Step 19 Though not expressed in the regulations, this refers to materials that are directly used or reused as a substitute for commercial chemical products; as they are functioning as raw materials and are therefore outside of RCRA jurisdiction (50 FR 619, 1/4/85). OAC 3745-51-02(E)(1)(b).

Step 21 As stated in OAC 3745-51-02(D), inherently waste-like materials are solid wastes when recycled in any manner. OAC 3745-51-02(E)(2)(d).

Step 22 The material is a solid waste unless it has been exempted under OAC 3745-51-04(A) or has been granted a variance under OAC 3745-50-311 or 312. Exemptions and variances are addressed in this section.

Figure 5.4(e)


Continued from Figure 5.4(d), Step 21 (No).
23
Is the material used in a manner constituting disposal ?
Yes
No
24
Is the material burned for energy recovery ?
Yes
No
25
Is the material accumulated speculatively ?
No
Yes
26
The process material is not a solid waste.
27
The material is a solid waste unless exempted or granted a variance.
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5.4 Solid Waste Exclusions (cont.)

Step 23 This includes materials used to produce products that are applied to the land. OAC 3745-51-02(E)(2)(a).

Step 24 This includes materials used to produce a fuel or that are contained in fuels. OAC 3745-51-02(E)(2)(b).

Step 25 Accumulated speculatively is defined at OAC 3745-51-01(C)(8). OAC 3745-51-02(E)(2)(c).

Step 26 If it is not abandoned or inherently waste-like, it is not a solid waste. Abandoned materials are addressed in Sections 5.1. Inherently waste-like materials are addressed in Section 5.2. OAC 3745-51-02(E).

Step 27 The material is a solid waste unless it has been exempted under OAC 3745-51-04 or has been granted a variance under OAC 3745-50-311 or 312. Exemptions and variances are addressed in Section 5.4.

5.5 Completing Solid Waste Worksheets

There are two primary worksheets for documenting the status of a materials with respect to the definition of solid waste at the FEMP:

- "Definition of Solid Waste - Worksheet" [Form 5.5(a)], and
- "Exclusions to the Definition of Solid Waste - Worksheet" [Form 5.5(b)].

The first worksheet is completed and included in the file for each material evaluation completed at the FEMP. The second worksheet is completed for each material for which an exclusion to the definition of solid waste is determined to apply.

5.5.1 "Definition of Solid Waste - Worksheet"

The basic definition of solid waste boils down to three basic questions:

- Is the material abandoned?
- Is the material being recycled in a manner that subjects it to regulation as a solid waste?
- Is the material inherently waste-like?

If the answer to one or more of these three questions is "yes" then the material is regulated as solid waste *unless* one or more of the exclusions to the definition of solid waste apply. The following site specific guidance is provided for evaluation of nuclear materials.

The definition of solid waste includes all discarded materials that are not specifically excluded from regulation or granted a variance. A discarded material is any material that is abandoned, recycled in certain manners, or inherently wastelike. None of the materials being offered for sale are being abandoned or are considered inherently waste-like. Some of these materials may, however, be considered recyclable materials subject to regulation as solid waste.

The following guidance specifies how materials at the FEMP are evaluated to determine if they are legitimate FEMP products or intermediates, or are recyclable materials. These definitions are dependent on both the material types and the management method for the material. The actual management method for certain of these materials may not be known until an offeror responds to the request for proposal (RFP). In the mean time, these materials may be evaluated with respect to the FEMP production

process to determine their status with respect to the definition of solid waste.

FEMP products are defined as materials that were produced as an end product from the production process and intended for use in defense nuclear programs. Uranium products include metal products such as derbies, flats, and fuel cores. Thorium products include both metal products and thorium oxides. These materials require no reclamation prior to their intended use, whether that be in production reactors or for armament and ballistics. Products are not considered solid waste until they are abandoned (i.e., accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated).

FEMP intermediates are defined as materials produced in the production process that were intended as feed to another onsite process. These include materials such as orange oxide (UO_3), green salt (UF_4), and remelt feeds. Intermediates are distinguished from recycle materials in that they are one in a series of steps that progressively move the materials to a higher level of processing. Items such as remelt feeds that constitute a lateral move in the production process (i.e., to change physical form) are also considered intermediates. Intermediates are also not considered solid waste until they are abandoned.

Recycle streams at the FEMP are comprised of those byproduct, waste, or off-specification materials that are returned to the process at a lower level in the process. Examples of recycle streams at the FEMP include materials such as recoverable trash, sump sludges, black oxide (U_3O_8), off-specification products or intermediates, metals for redissolution (e.g., top crops, metal spills, and briquetted chips and turnings), and magnesium fluoride (MgF_2). Recyclable materials may be regulated as solid waste depending on material type and management method.

5.5.2 "Exclusions to the Definition of Solid Waste - Worksheet"

Exclusions to the definition of solid waste that potentially apply to FEMP materials have been summarized on these two worksheets.

DEFINITION OF SOLID WASTE - WORKSHEET

This worksheet documents evaluation of this material to determine if it is regulated under RCRA as solid waste under OAC 3745-51-02 (40 CFR 261.2).

A. WASTE STREAM IDENTIFICATION	
1. MEF #:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes)
3. EVALUATOR:	4. DATE:

To be regulated as a hazardous waste, a material must first meet the definition of solid waste. Solid wastes are defined as materials that are being "discarded," unless the ma is specifically excluded from the definition of solid waste. Materials are considered to be discarded when they are *abandoned*, *recycled* in certain manners, or when the defined by the EPA as *inherently waste-like*. Section B must be completed to document the status of the material with respect to the definition of solid waste.

B. DEFINITION OF SOLID WASTE

Meets the criteria	Evaluation Criteria
___ yes ___ no	The material is being *abandoned* by being disposed of, burned or incinerated, or accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated. - OAC 3745-51-02(B)/40 CFR 261.2(b).
___ yes ___ no	If the material is being *recycled* (i.e., used, reused, or reclaimed) - or accumulated, stored, or treated before recycling - it may be subject to regulation as solid waste. Identify the material type and the type of management for the material by circling the appropriate entry in the table below:

Material Type	Type of Management				
	(I) Use constituting disposal 3745-51-02(C)(1)/(261.2(c)(1))	(II) Energy recovery/fuel 3745-51-02(C)(2)/(261.2(c)(2))	(III) Reclamation 3745-51-02(C)(3)/(261.2(c)(3))	(IV) Speculative accumulation 3745-51-02(C)(4) (261.2(c)(4))	(V) Exempted use/reuse activities not (I) - (IV) 3745-51-02((261.2(e))
Spent Materials	(Y)	(Y)	(Y)	(Y)	(N)
Sludges (listed in OAC 3745-51-31 or 3745-51-32/261.31 or 261.32)	(Y)	(Y)	(Y)	(Y)	(N)
Sludges exhibiting a characteristic	(Y)	(Y)	(N)	(Y)	(N)
By-products (listed in OAC 3745-51-31 or 3745-51-32/261.31 or 261.32)	(Y)	(Y)	(Y)	(Y)	(N)
By-products exhibiting a characteristic	(Y)	(Y)	(N)	(Y)	(N)
Commercial chemical products (listed in OAC 3745-51-33/OAC 3745-51-33)	(Y)	(Y)	(N)	(N)	(N)
Scrap metal	(Y)	(Y)	(Y)	(Y)	(N)

If the material type/management combination are identified by (Y) then the material is subject to regulation as solid waste. If the material type/management combination are identified by (N) then the material is not subject to regulation as solid waste. Any recycled materials determined not to be regulated as solid waste require additional written documentation supporting their regulatory status. - OAC 3745-51-02(F)/40 CFR 261.2(f).

For materials determined to be recycled in accordance with an exempted use/reuse activities provided under OAC 3745-51-02(E) the worksheet "Exclusions to the Definition of Solid Waste" must be completed.

___ yes ___ no	The material is *inherently waste-like* (i.e., identified as hazardous waste F020 - F023, F026 or F028. - OAC 3745-51-02(D)/40 CFR 261.2(d).
___ yes ___ no	The material is specifically excluded from the Definition of Solid Waste. The worksheet "Exclusions to the Definition of Solid Waste" must be completed.

EXCLUSIONS TO DEFINITION OF SOLID WASTE - WORKSHEET

MEF Number: _____ *Rev No.:* ____

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This worksheet documents evaluation of this material to determine if it is regulated under RCRA as (solid) waste under OAC 3745-51-02 (40 CFR 261.2). The RCRA regulations provide specific exclusions to the definition of solid waste. Section A provides for documentation of those exclusions that potentially appl waste streams at the FEMP.

A. EXCLUSIONS TO THE DEFINITION OF SOLID WASTE

Exclusion Applies	Applicable Exclusion
___yes ___no	Industrial wastewater discharges that are point source discharges subject to regulation under section 402 of the Clean Water Act, as amended. [OAC 3745-51-04(A)(2)] [Note: Exclusion applies only to actual point source discharge. No exclusion for collecting, storing, or treating industrial wastewaters prio to discharge. Exclusion not applicable to sludges that are generated by industrial wastewater treatment.
___yes ___no	Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended. [Note: This exclusion is only applicable to solid waste determinations made pursuant to a portion of the federal hazardous waste management program which Ohio has not been authorized to administer (e.g., corrective action). Ohio promulgated an exclusion from th definition of *hazardous* waste at OAC 3745-51-03(A)(2)(d). See "Exclusions to the Definition of Hazardous Waste" Worksheet.]
___yes ___no	Secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reu in the production process provided: ___ Only tank storage is involved, and the entire process through completion of reclamation is closed-loop (i.e., entirely connected with pipes or other comparable enclosed means of conveyance) ___ Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators) ___ The secondary materials are never accumulated in such tanks for over twelve months without being reclaimed. ___ The reclaimed material is not used to produce a fuel,or used to produce products that are used in a manner constituting disposal [OAC 3745-51-04(A)(7)]

Section B provides for identification of specific exempted use/reuse activities. Note that these activities are only exempted provided the materials are not manag one or more of manners identified in Columns I through IV of the recycling section of the worksheet "Definition of Solid Waste"

B. EXEMPTED USE/REUSE ACTIVITIES FOR RECYCLING

Exemption Applies	Applicable Exemption
___yes ___no	Used or reused ingredients in an industrial process to make a product, provided the materials are not reclaimed. OAC 3745-51-02(E)(1)(
___yes ___no	Used or reused as effective substitutes for commercial products. OAC 3745-51-02(E)(1)(b).
___yes ___no	Returned to the original process from which they are generated, without first being reclaimed. The material must be returned as a substitute for raw material feedstock, and the process must use raw materials as principal feedstocks. OAC 3745-51-02(E)(1)(c).

___ Additional information attached to support exclusion to the definition of solid waste - provide attached narrative.

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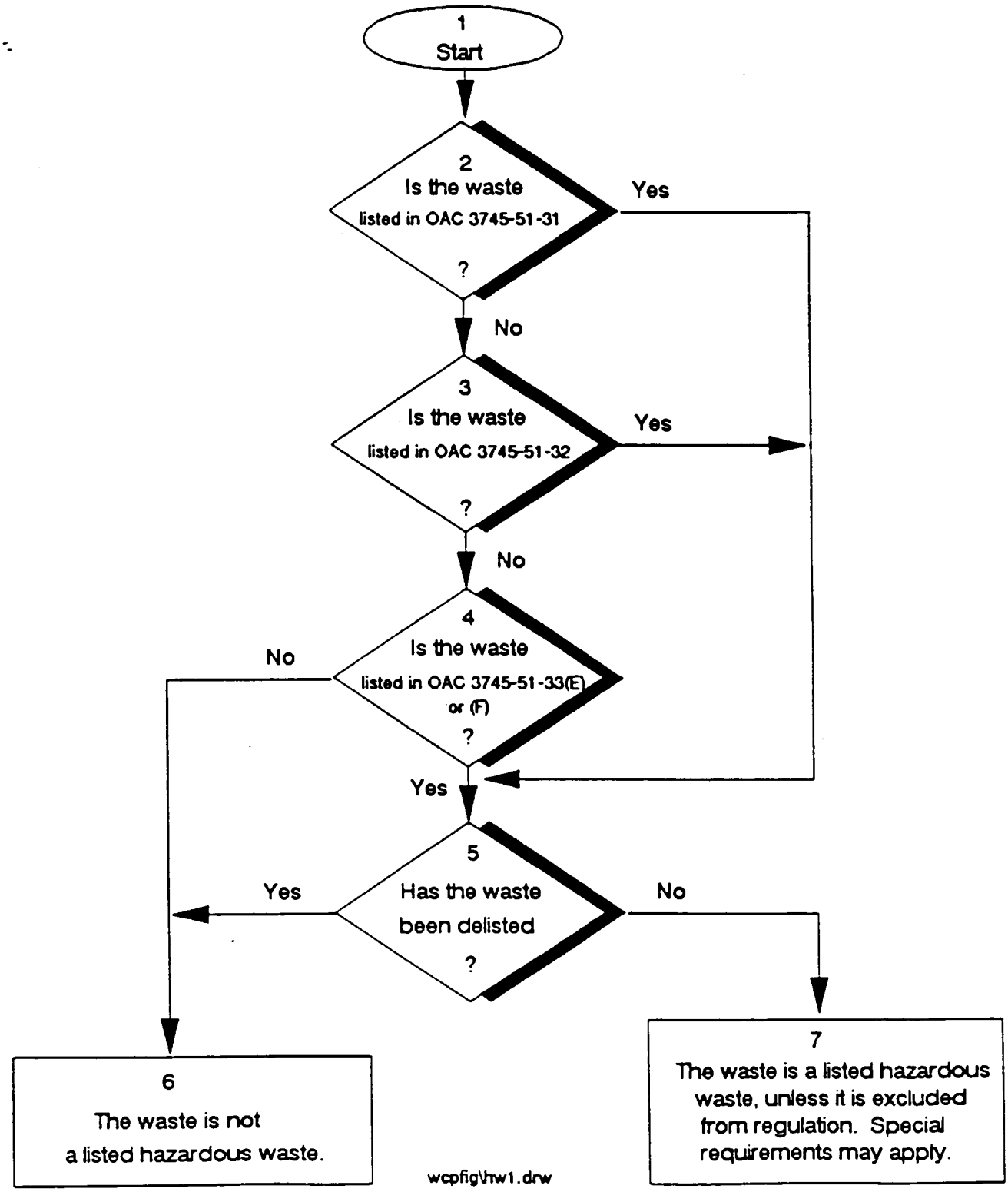
6.0 Hazardous Waste

This section provides the guidance and implementing procedures for identifying regulated hazardous waste in the State of Ohio. In addition, it provides the means for determining the status of hazardous waste with respect to the Land Disposal Restriction (LDR) regulations under the Hazardous Waste Management Program. These determinations are required as a matter of law and provide the basis for decisionmaking regarding waste management at the FEMP.

The approach for presenting the logic for identifying hazardous in the State of Ohio is adopted from the DOE Headquarters guidance, "Definitions of Solid & Hazardous Wastes" (DOE/EH-0273). Modifications have been made to reference the Ohio Administrative Code (OAC) in lieu of the federal regulations (Code of Federal Regulations) for authorized portions of the Ohio Hazardous Waste Management Program. The "Hazardous Waste Rules Table" included in the full set of the OAC rules, Chapters 3745-49 through 3745-69, provides a means for correlating CFR references to the corresponding OAC rule.

Following the general guidance is specific guidance for identifying hazardous waste and determining its LDR status at the FEMP. This site guidance provides the means to complete worksheets that document the characterization. The worksheets focus on those parts of the regulations that are pertinent to waste identification at the FEMP.

Figure 6.1
Listed Hazardous Wastes



6.1 Listed Hazardous Wastes

Step 1 **Start.** To be a hazardous waste, a material must first be determined to be a solid waste as defined at OAC 3745-51-02 [Section 5.0]. A solid waste is a hazardous waste if it is a **listed waste** or if it exhibits a characteristic. it is a **listed waste** if it is named in one of three lists developed by EPA and has not been delisted pursuant to OAC 3745-51-20 or 3745-51-22. The lists are found in OAC 3745-51-31 to 33. OAC 3745-51-03(A)(2)(b).

Step 2 **Non-specific source wastes ("F" wastes):** These include certain spent solvent wastes; certain wastes from electroplating, heat treating, and chemical conversion coating operations; certain wastes from the production of chlorinated phenols, aliphatic hydrocarbons, and chlorinated benzenes; and multi-source leachate. OAC 3745-51-31.

Step 3 **Specific source wastes ("K" wastes):** These are wastes from specifically identified industries such as wood preserving, petroleum refining and organic chemical manufacturing. These wastes typically include sludges, still bottoms, wastewaters, spent catalysts, and residues. OAC 3745-51-32.

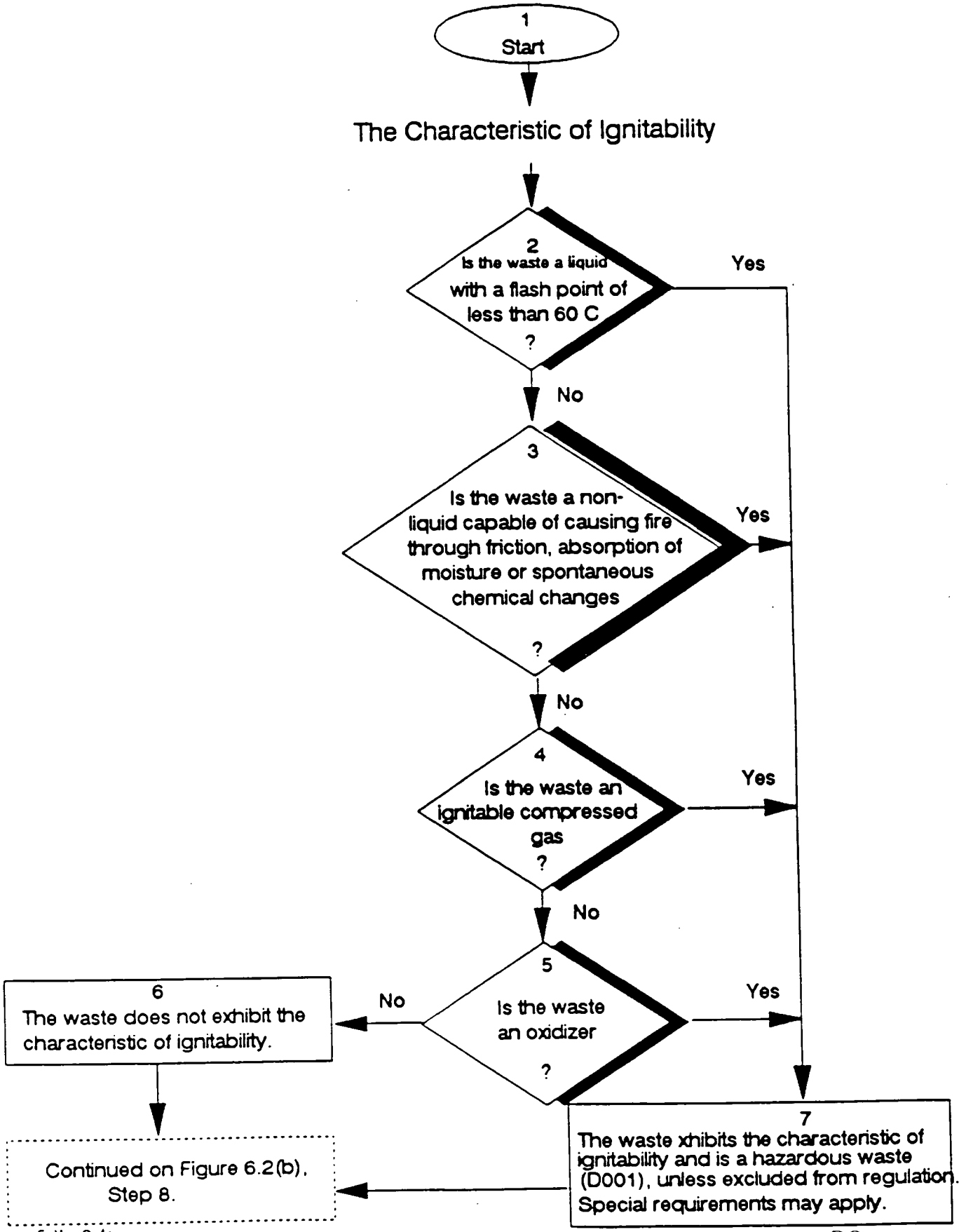
Step 4 **Commercial chemical products ("P" and "U" wastes):** These wastes are specific commercial chemical products or manufacturing chemical intermediates. This list includes chemicals such as chloroform and creosote, acids such as sulfuric acid and hydrochloric acid, and pesticides such as DDT and kepone. OAC 3745-51-33.

Step 5 As stated above, a waste may be delisted under OAC 3745-50-221. Ohio utilizes the federal delisting petition process under §260.22 for an exclusion for a waste at a particular generating facility and recognizes US EPA's decision to grant or deny a petition. Specific wastes which have been granted a delisting petition are identified at OAC 3745-51-30(E).

Step 6 If the unlisted or delisted waste does not exhibit a characteristic of a hazardous waste, is not a mixture of a solid and a hazardous waste, and is not "derived-from" a hazardous waste, it is not a hazardous waste. Characteristics of hazardous waste are addressed in Section 6.2. Mixtures and "derived-from" wastes are addressed in Section 6.3.

Step 7 The waste is a hazardous waste, unless it is excluded from regulation. Special requirements may apply. Hazardous waste exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.2(a)
Characteristic Hazardous Waste



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6.2 Characteristic Hazardous Wastes

Step 1 **Start.** A solid waste is a hazardous waste if it exhibits any of the four characteristics of hazardous waste established by EPA, and is not excluded from regulation. The four characteristics are ignitability, corrosivity, reactivity and toxicity.

THE CHARACTERISTIC OF IGNITABILITY

Step 2 This applies to a representative sample of a liquid, as explained below, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by one of the following:

- a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80, or
- a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78, or
- as determined by an equivalent test method approved by the Administrator under procedures set forth in 40 CFR 260.20 and 260.21. OAC 3745-51-21(A)(1).

To determine whether a waste sample contains free liquids, on April 30, 1985 (50 FR 18370) EPA promulgated a final rule requiring the Paint Filter Liquids Test (Method 9095, EPA publication SW-846): "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods"). This was codified into regulation at OAC 3745-57-14 and 3745-68-14.

Step 3 This applies to a representative sample of a non-liquid that is capable, under standard temperature and pressure, of causing fire and, when ignited, burns so vigorously and persistently that it creates a hazard. OAC 3745-51-21-(A)(2).

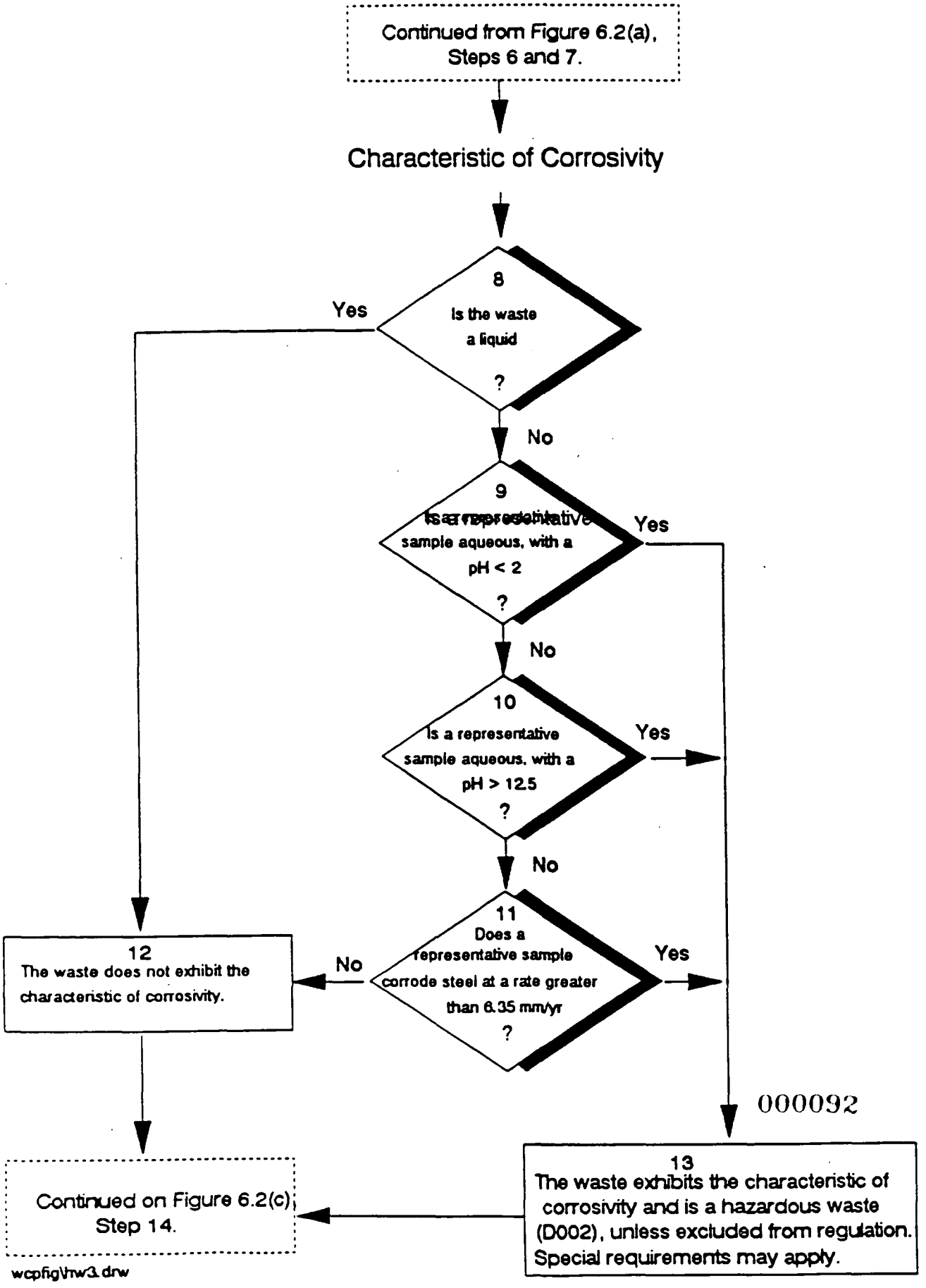
Step 4 This applies to an **ignitable compressed gas** as defined in 49 CFR 173.300 (Department of Transportation Regulations) and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§260.20 and 260.21. OAC 3745-51-21(A)(3).

Step 5 **Oxidizer** is defined at 49 CFR 173.151 as a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter. OAC 3745-51-21(A)(4).

Step 6 Though it does not exhibit this characteristic, it may exhibit others. Continue to Step 8.

Step 7 The waste is a hazardous waste, unless it is excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.2(b)



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6.2 Characteristic Hazardous Wastes (cont.)

THE CHARACTERISTIC OF CORROSIVITY

Step 8 This is determined on the basis of a representative sample as explained in Section 6.2, Step 2. OAC 3745-51-22(A)

EPA has concluded that, in as much as the great majority of wastes are presumed to be in liquid or semi-liquid form, there is no demonstrated need to address corrosive solids (45 FR 33109, 5/19/80).

Steps 9 & 10 The pH of a representative sample must be determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in SW-846's "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods." In a letter dated September 15, 1987, EPA defines aqueous as a liquid phase composed of 50% or more water. OAC 3745-51-22(A)(1).

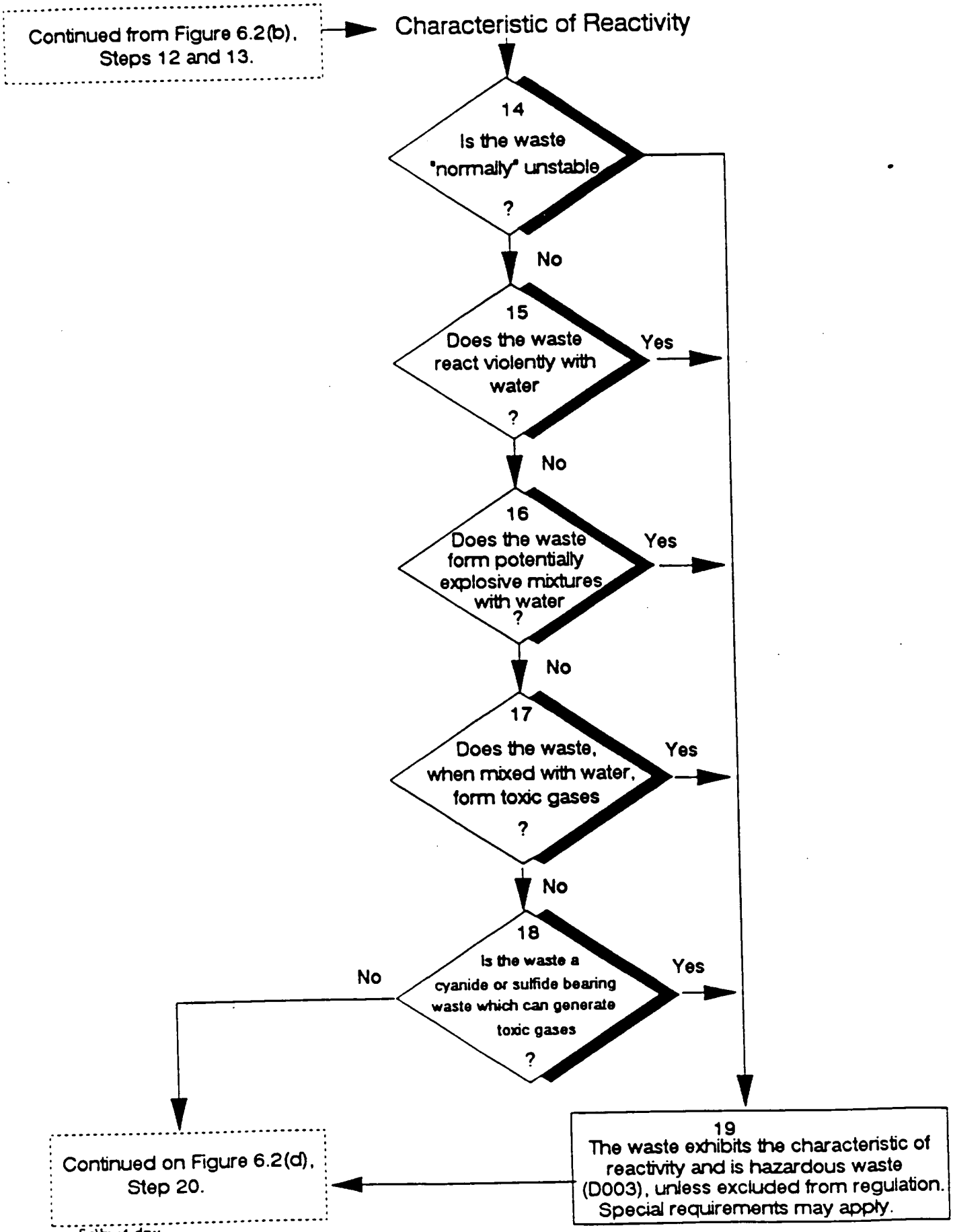
Step 11 The steel used in the test of a representative sample is specified to be SAE 1020; the test temperature is 55°C (130°F). The test method is to be either:

- that specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", EPA publication #SW-846, or
- an equivalent test method approved by the Administrator under the procedures set forth in §§260.20 and 260.21. OAC 3745-51-22(A)(2).

Step 12 Though it does not exhibit this characteristic, it may exhibit others. Continue on to Step 14.

Step 13 The waste is a hazardous waste, unless it is excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.2(c)



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6.2 Characteristic Hazardous Wastes (cont.)

THE CHARACTERISTIC OF REACTIVITY

Step 14 A waste is "normally" unstable if a representative sample readily undergoes violent change without detonating. OAC 3745-51-23(A)(1).

Step 15 This is determined on the basis of a representative sample. OAC 3745-51-23(A)(2).

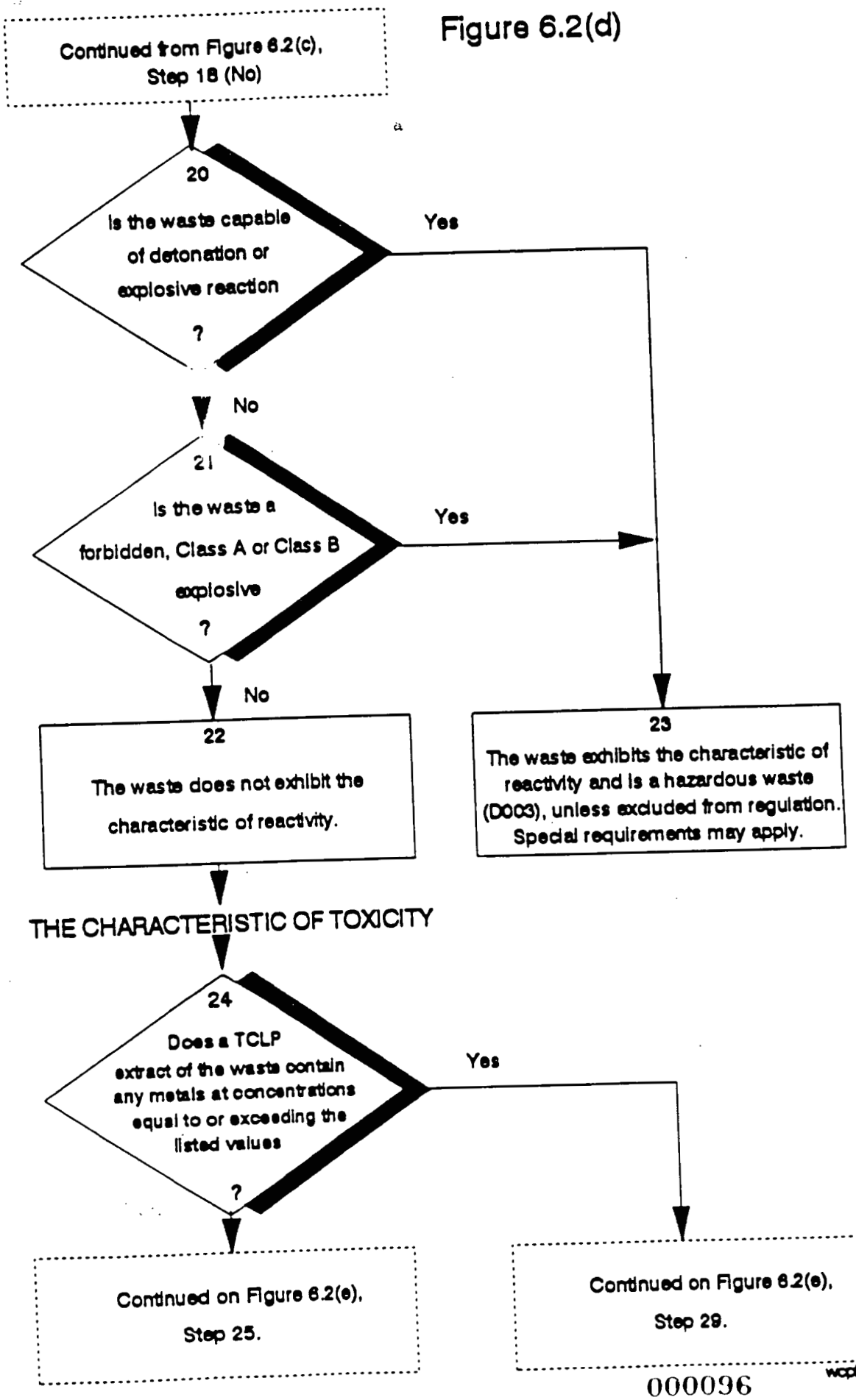
Step 16 This is determined on the basis of a representative sample. OAC 3745-51-23(A)(3).

Step 17 This applies to a representative sample which, when mixed with water, generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment. OAC 3745-51-23(A)(4).

Step 18 This applies to a representative sample of a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment. OAC 3745-51-23(A)(5).

Step 19 The waste is a hazardous waste, unless it is excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.2(d)



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6.2 Characteristic Hazardous Wastes (cont.)

Step 20 This applies to a representative sample that is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement and to a representative sample that is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure. OAC 3745-51-23(A)(6) and (7).

Step 21 This applies to a representative sample that is

- a **forbidden explosive** as defined in 49 CFR 173.51: This is one of ten categories of explosives expressly forbidden from transportation under Department of Transportation regulations. These include explosive compounds which ignite spontaneously, new explosive compounds, explosive mixtures containing ammonium salt and a chlorate, explosive metals containing an acidic metal salt and a chlorate, leaking packages of explosives, nitroglycerin, loaded firearms, certain fireworks, and toy torpedoes.

- a **Class A explosive** as defined in 49 CFR 173.53. Nine specific "types" of explosives plus 13 other categories of explosives are defined as Class A explosives.

- a **Class B explosive** as defined in 49 CFR 173.88 special fireworks, which are manufactured articles designed primarily for the purpose of producing visible or audible pyrotechnic effects by combustion or explosion. Examples are provided in the regulation. OAC 3745-51-23(A)(8).

Step 22 Though it does not exhibit this characteristic, it may exhibit others. Continue on to Step 24.

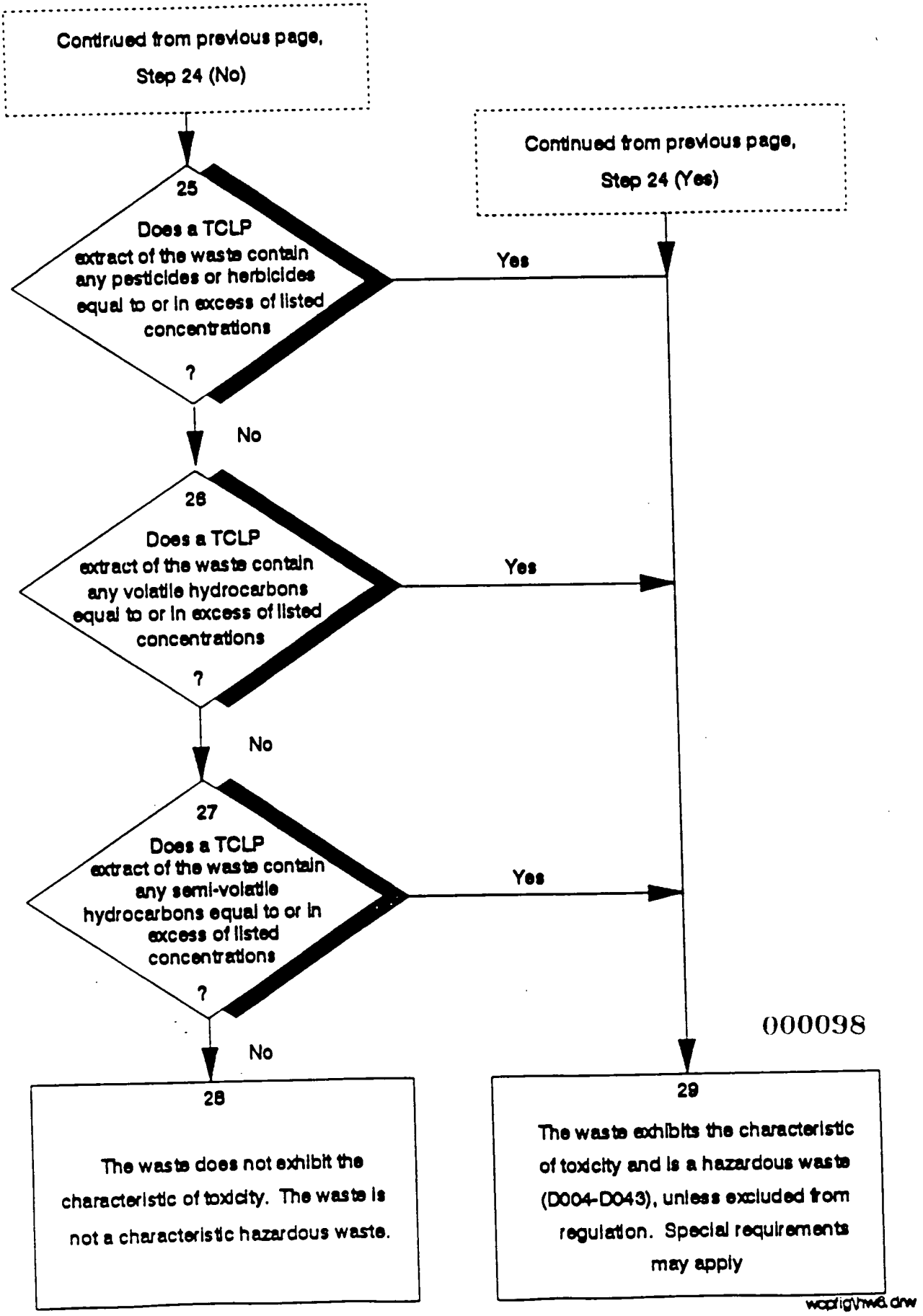
Step 23 The waste is a hazardous waste, unless it is excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

THE CHARACTERISTIC OF TOXICITY

Step 24 The Toxicity Characteristic Leaching Procedure (TCLP) is described in the Appendix to OAC 3745-51-24. Equivalent methods approved by the Administrator under the procedures set forth in §§260.20 and 260.21 may be used to determine toxicity. Where a representative sample of the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in the Appendix, is considered to be the extract. OAC 3745-51-24.

Metals concentrations in a representative sample, in mg/L, listed in OAC 3745-51-24 (with EPA hazardous waste number).

Figure 6.2(e)



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6.2 Characteristic Hazardous Wastes (cont.)

Step 25 Pesticides and herbicides concentrations in a representative sample, in mg/L, listed in OAC 3745-51-24 (with EPA hazardous waste number).

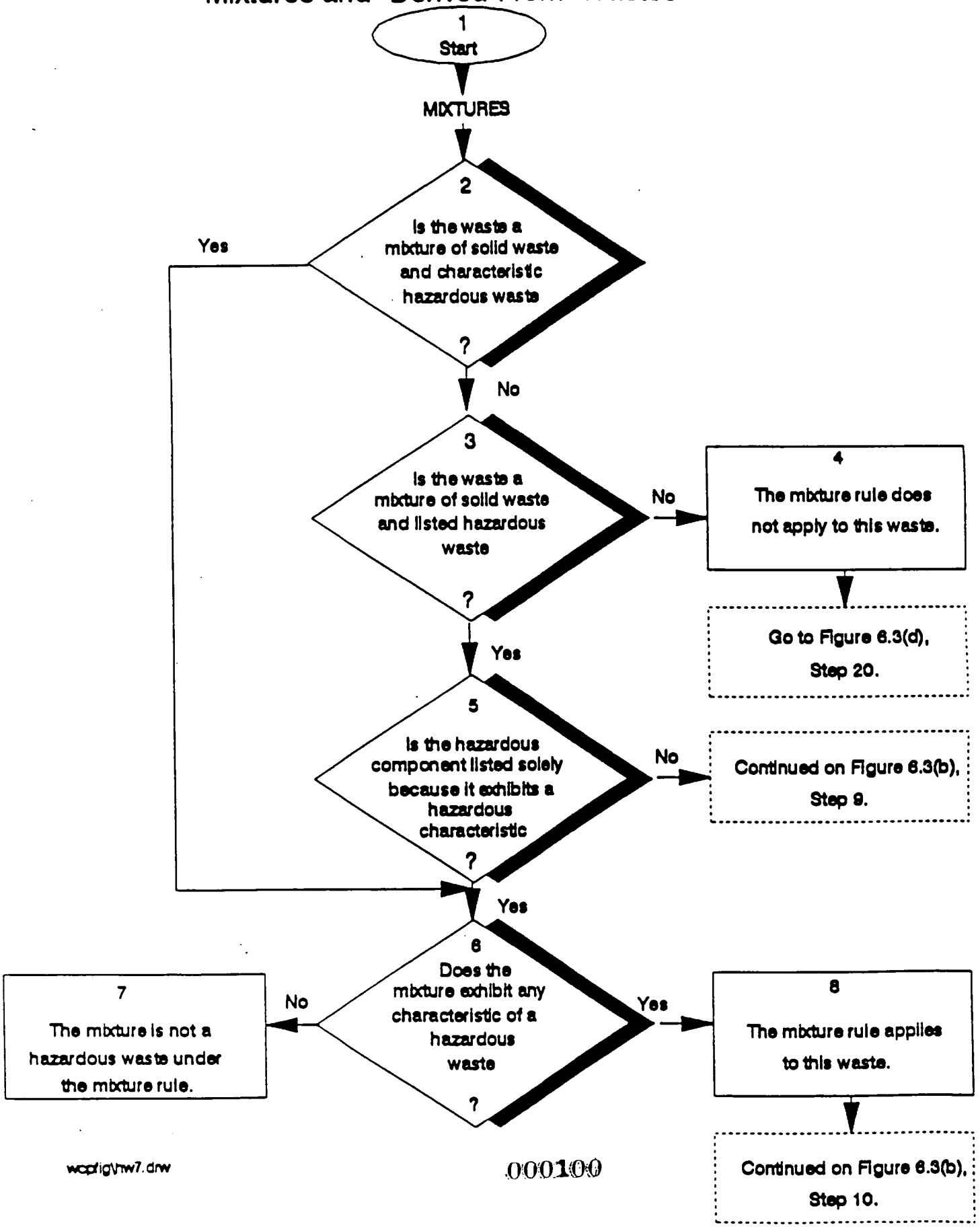
Step 26 Volatile organic hydrocarbon concentrations in a representative sample, in mg/L, listed in OAC 3745-51-24 (with EPA hazardous waste number).

Step 27 Semi-volatile organic hydrocarbon concentrations in a representative sample, in mg/L listed in OAC 3745-51-24 (with EPA hazardous waste number):

Step 28 If the waste is not a listed hazardous waste, is not a mixture of a solid and hazardous waste, and is not "derived-from" a hazardous waste, it is not a hazardous waste. Listed hazardous wastes are addressed in Section 6.1. Mixtures and "derived-from" wastes are addressed in Section 6.3.

Step 29 While a representative sample that fails the TC for any one constituent will classify the waste as a hazardous waste, the other constituent categories should be examined to fully characterize its toxicity. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.3(a)
Mixtures and "Derived-From" Wastes



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6.3 Mixtures and "Derived-From" Wastes

Step 1 **Start.** Determining whether a waste is a hazardous waste also involves determining if the waste is a mixture of solid and hazardous wastes or if it is derived-from the treatment, storage or disposal of these wastes. OAC 3745-51-03(A) - (D).

MIXTURES

Step 2 Mixtures of solid wastes and characteristic hazardous wastes may be hazardous, provided the mixture continues to exhibit the hazardous characteristics. OAC 3745-51-03(A)(2)(a).

Step 3 Mixtures of solid wastes and listed hazardous wastes may be hazardous wastes. OAC 3745-51-03(A)(2)(c) and (e).

Step 4 Though the mixture rule does not apply, the waste may be hazardous under the "derived-from" rule.

Step 5 The basis for listing the waste is provided in OAC 3745-51-31 to 33 and in the Appendix to OAC 3745-51-30.

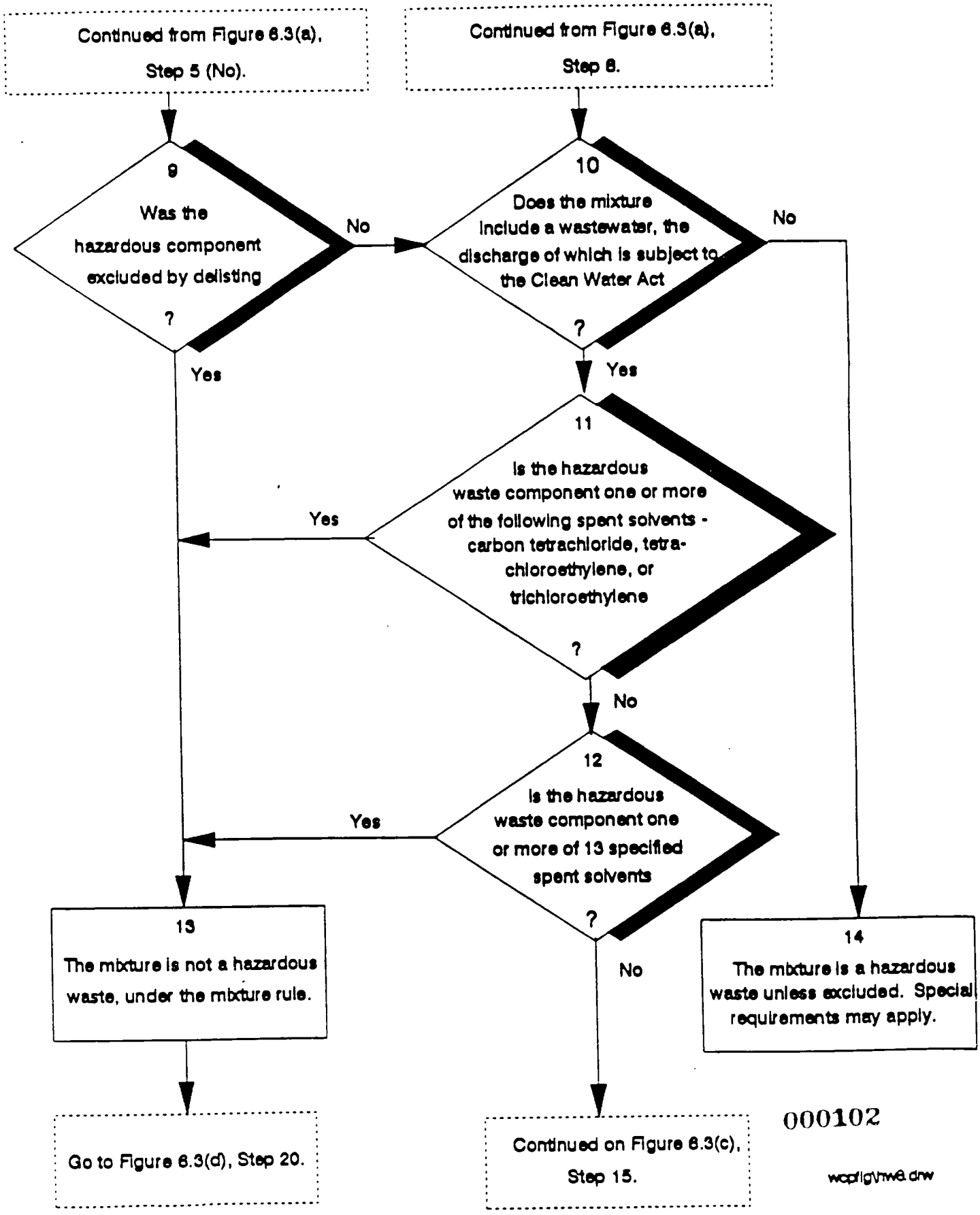
Step 6 The characteristics are addressed in OAC 3745-51-21 to 24 and Section 6.2.

The mixture rule can apply to mixtures containing mining wastes otherwise excluded from regulation under OAC 3745-51-04(B)(7) (wastes from extraction, beneficiation and processing of ores). It applies if the mixture contains other characteristic wastes, and exhibits characteristics that would not have been exhibited by the mining waste alone. OAC 3745-51-03(A)(2)(a).

Step 7 For mixtures of solid and listed wastes, the rule does not apply if the resultant mixture no longer exhibits any characteristic of hazardous waste or if the solid waste is excluded from regulation under OAC 3745-51-04(B)(7) and the resultant mixture no longer exhibits any characteristic of hazardous waste for which the hazardous waste listed. OAC 3745-51-03(A)(2)(c).

Step 8 If the mixture exhibits any characteristic, it may be hazardous waste unless it meets certain conditions which exclude it from regulation. Continue on to Step 10.

Figure 6.3(b)



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6.3 Mixtures and "Derived-From" Wastes (cont.)

Step 9 These exclusions are addressed under OAC 3745-50-221. Petitions may be made to amend OAC 3745-51 to exclude a waste at a particular facility. The excluded wastes are listed in the Appendix to OAC 3745-51-30.

Step 10 Either Section 402 or 307(b) of the Clean Water Act may apply. This includes wastewater at facilities which have eliminated the discharge of wastewater. OAC 3745-51-03(A)(2)(e).

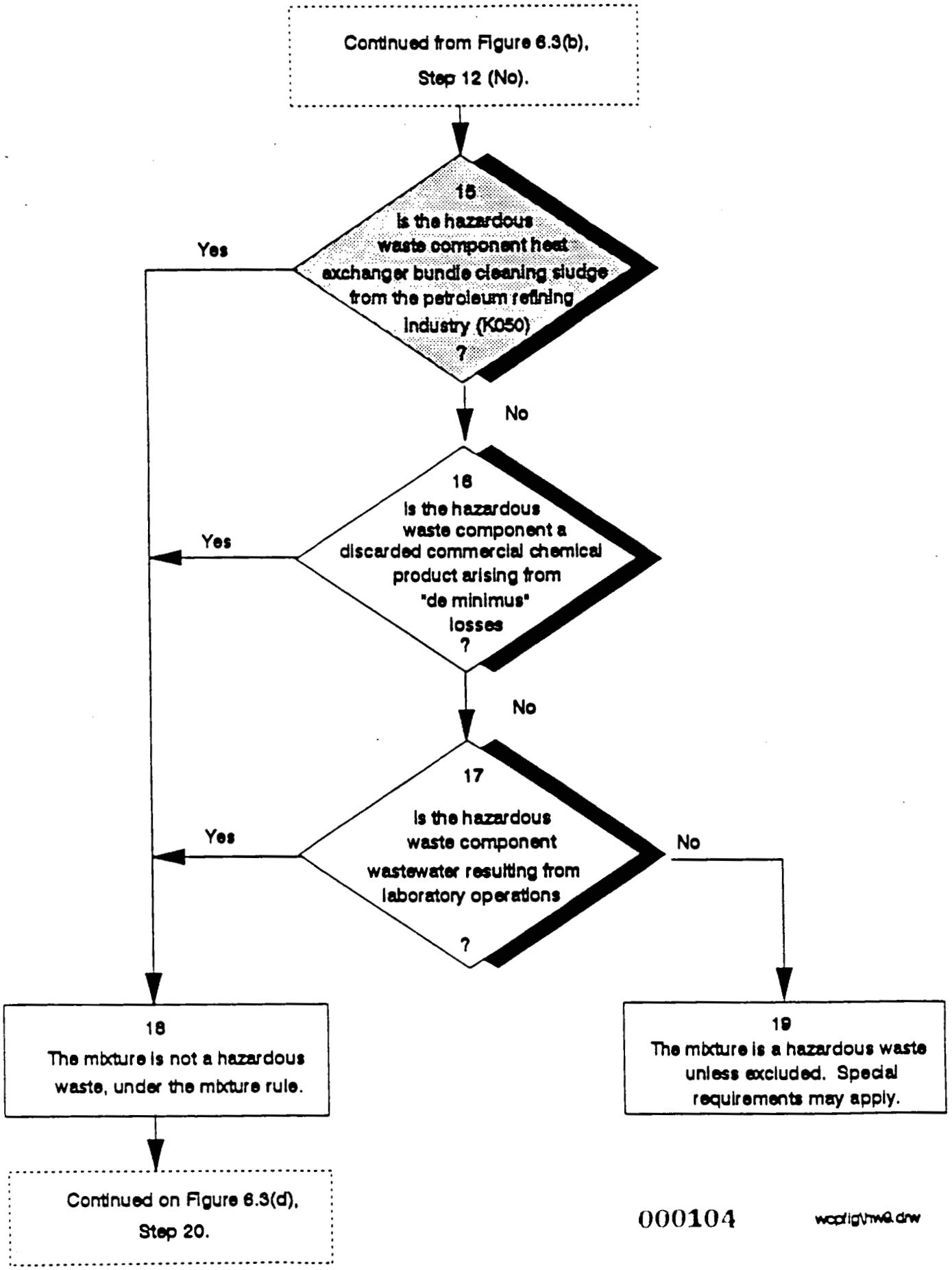
Step 11 The regulation specifies that the hazardous component be one or more of the following spent solvents listed in OAC 3745-51-31--carbon tetrachloride, tetrachloroethylene, trichloroethylene--provided, that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 1 part per million. OAC 3745-51-03(A)(2)(e)(i).

Step 12 The thirteen specified components (listed in OAC 3745-51-31) are methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents. Wastewater mixtures with these hazardous components are excluded from being a hazardous waste provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 25 parts per million. OAC 3745-51-03(A)(2)(e)(ii).

Step 13 Though the mixture is not a hazardous waste under the mixture rule, it is still regulated under the Clean Water Act.

Step 14 The mixture is a hazardous waste unless excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.3(c)



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6.3 Mixtures and "Derived-From" Wastes (cont.)

Step 15 K050 is listed at OAC 3745-51-32. OAC 3745-51-03(A)(2)(e)(iii).

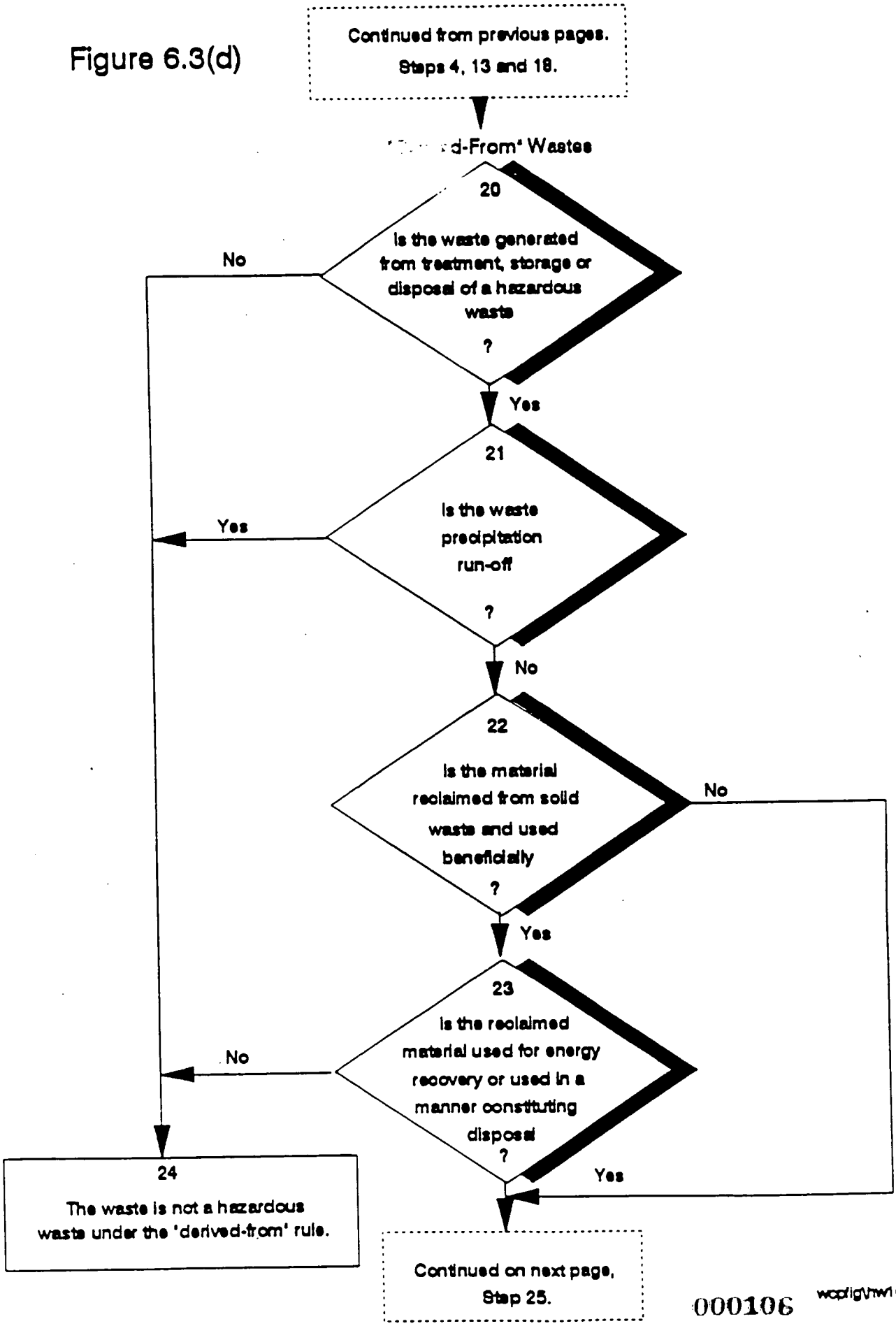
Step 16 This applies to a discarded commercial chemical product, or chemical intermediate listed in OAC 3645-51-33, arising from *de minimis* losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purposes of this subparagraph, "*de minimis*" losses include those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing. OAC 3745-51-03(A)(2)(e)(iv).

Step 17 This applies to wastewater resulting from laboratory operations containing toxic (T) wastes listed in OAC 3745-51-31 to 33, provided that the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pre-treatment system, or provided the wastes' combined annualized average concentration does not exceed one part per million in the headworks of the facility's wastewater treatment or pre-treatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation. OAC 3745-51-03(A)(2)(e)(v).

Step 18 Though the mixture is not a hazardous waste under the mixture rule, it is still regulated under the Clean Water Act.

Step 19 The mixture is a hazardous waste unless excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.3(d)



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6.3 Mixtures and "Derived-From" Wastes (cont.)

Step 20 This includes sludge, spill residue, ash, emission control dust and leachate. OAC 3745-51-03(C)(2)(a).

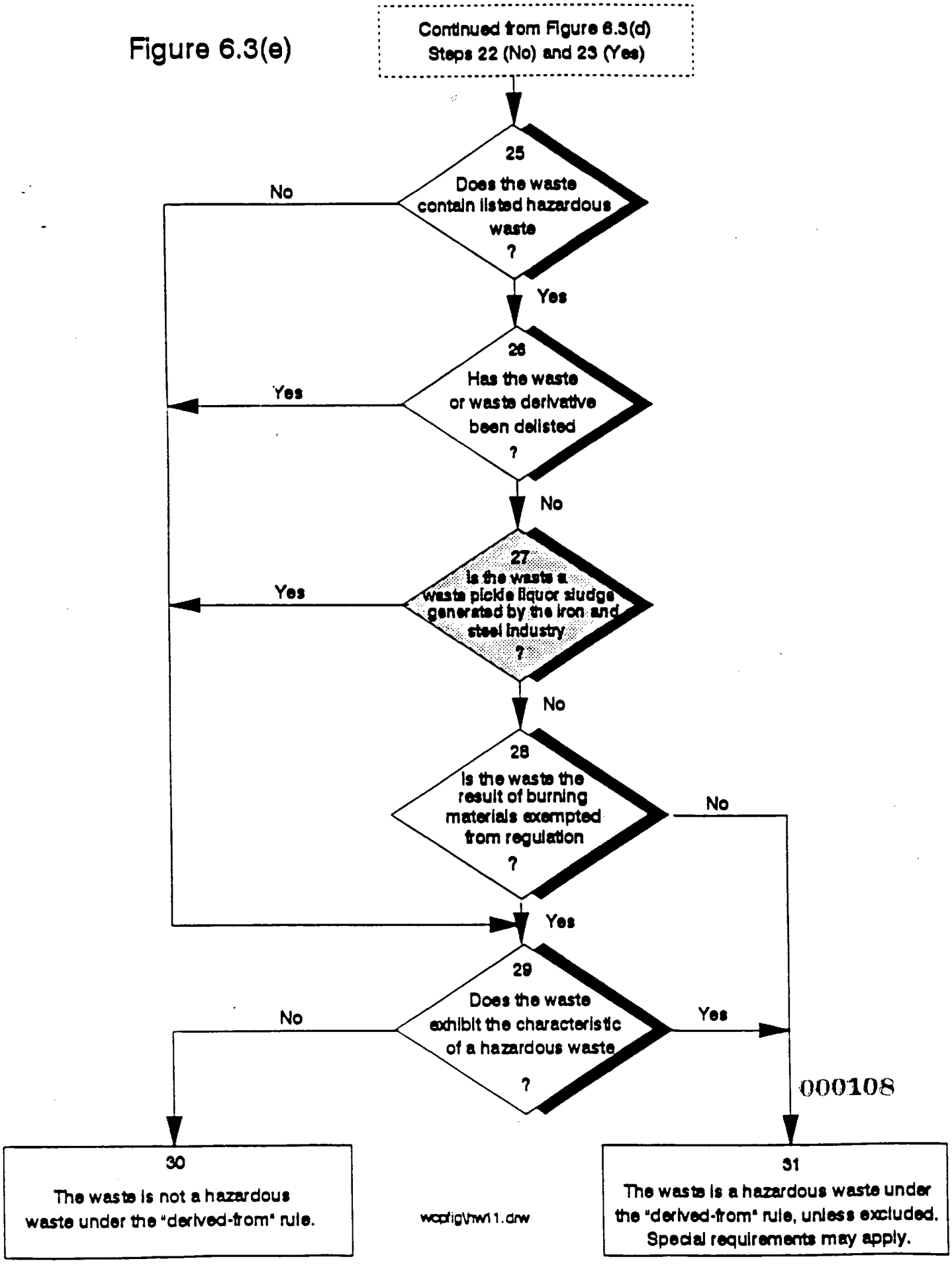
Step 21 The "derived-from" rule does not cover precipitation runoff, the assumption being that the water in precipitation runoff most often will not have had sufficient contact with the waste to solubilize waste constituents. (Collected runoff would be a solid waste and, if it exhibited characteristics, would have to be managed as a hazardous waste (45 FR 33096, 5/19/80). OAC 3745-51-03(C)(2)(a).

Step 22 This refers to commercial products reclaimed from hazardous wastes. They are considered products, not wastes, and are not subject to the RCRA hazardous waste regulations (50 FR 634, 1/4/85). OAC 3745-51-03(C)(2)(a).

Step 23 EPA asserts jurisdiction over all secondary materials that are used in a manner constituting disposal or burned for energy recovery. They are solid wastes and may potentially be hazardous (50 FR 627 and 629, 1/4/85). OAC 3745-51-03(C)(2)(a).

Step 24 If the material is not generated from waste treatment, it is not a hazardous waste under the "derived-from" rule. If not a listed or characteristic hazardous waste, it is not a hazardous waste. Listed hazardous wastes are addressed in Section 6.1. Characteristic hazardous wastes are addressed in Section 6.2.

Figure 6.3(e)



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6.3 Mixtures and "Derived-From" Wastes (cont.)

Step 25 This includes waste streams containing listed hazardous wastes or derived-from the treatment of listed hazardous wastes. Listed hazardous wastes are addressed in Section 6.1.

Step 26 Delisting is addressed under OAC 3745-51-221. OAC 3745-51-03(D)(2). Delisting is explained further on Section 6.1.

Step 27 This applies if the waste pickle liquor sludge is generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC codes 331 and 332). OAC 3745-51-03(C)(2)(b)(i).

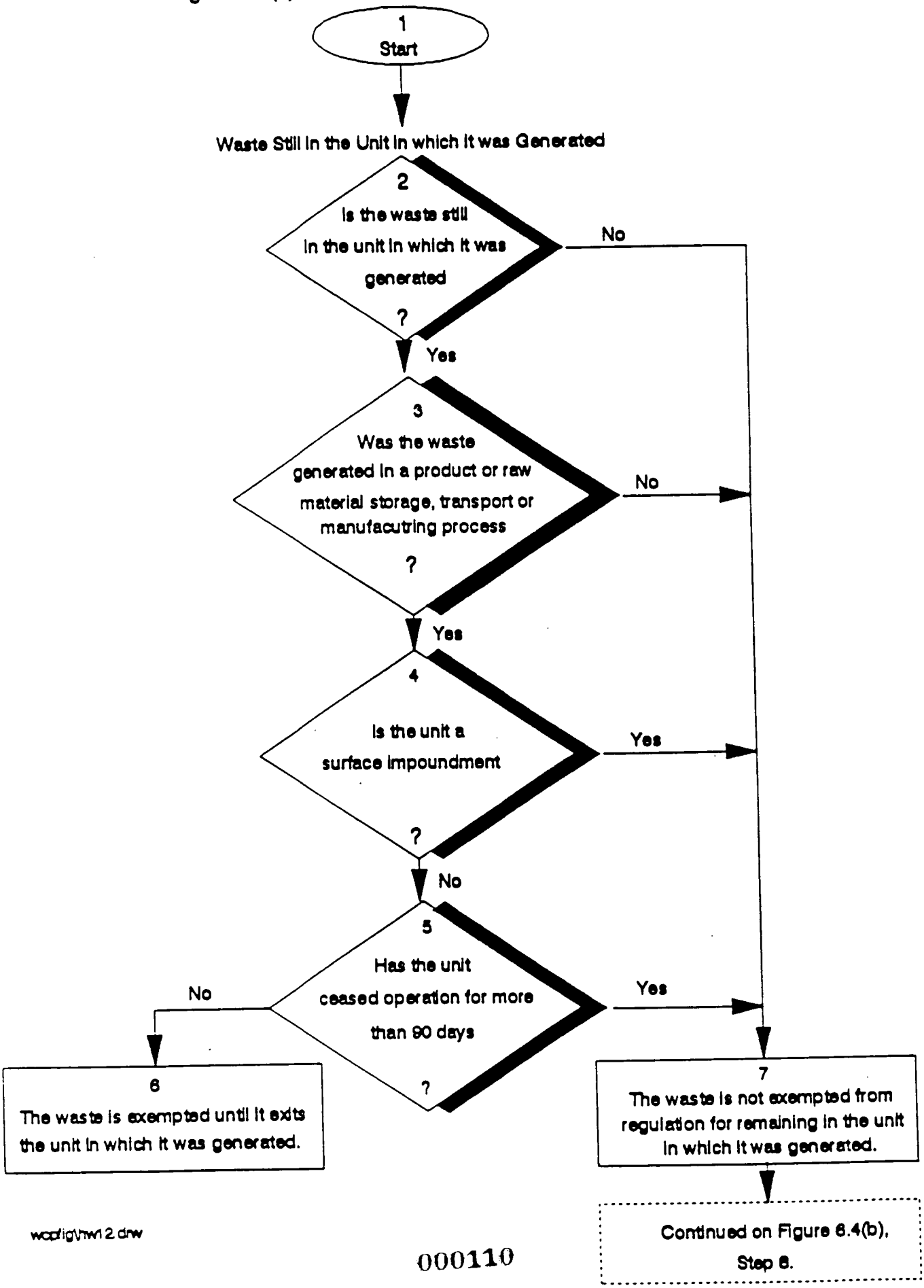
Step 28 This applies to "recyclable materials" exempted from regulation by OAC 3745-51-03(A)(3)(e) - (i). These are materials associated with petroleum refining, production or transportation practices. They are addressed in Section 6.5. OAC 3745-51-03(C)(2)(b)(ii)).

Step 29 The characteristics of a hazardous waste are defined at OAC 3745-51-21 to 24 and addressed in Module 6. OAC 3745-51-03(D)(1).

Step 30 If not a listed or characteristic hazardous waste, it is not a hazardous waste. Listed hazardous wastes are addressed in Section 6.1. Characteristic hazardous wastes are addressed in Section 6.2.

Step 31 The "derived-from" waste is a hazardous waste unless excluded from regulation. Special requirements may apply. Exclusions are addressed in Section 6.4. Special requirements are addressed in Section 6.5.

Figure 6.4(a) - Hazardous Waste Exclusions



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6.4 Hazardous Waste Exclusions

Step 1 **Start**. Wastes determined to be hazardous may be excluded from the definition of hazardous waste under OAC 3745-51-04 and 08. These exclusions include waste still in the unit in which it was generated, certain specified wastes, PCB-containing dielectric fluid, and samples.

WASTE STILL IN THE UNIT IN WHICH IT WAS GENERATED

Step 2 Once a waste has exited the unit in which it was generated, this particular exclusion can no longer apply to it. OAC 3745-51-04(C).

Step 3 This applies if the unit is a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or a manufacturing process unit or an associated non-waste-treatment-manufacturing unit. OAC 3745-51-04(C).

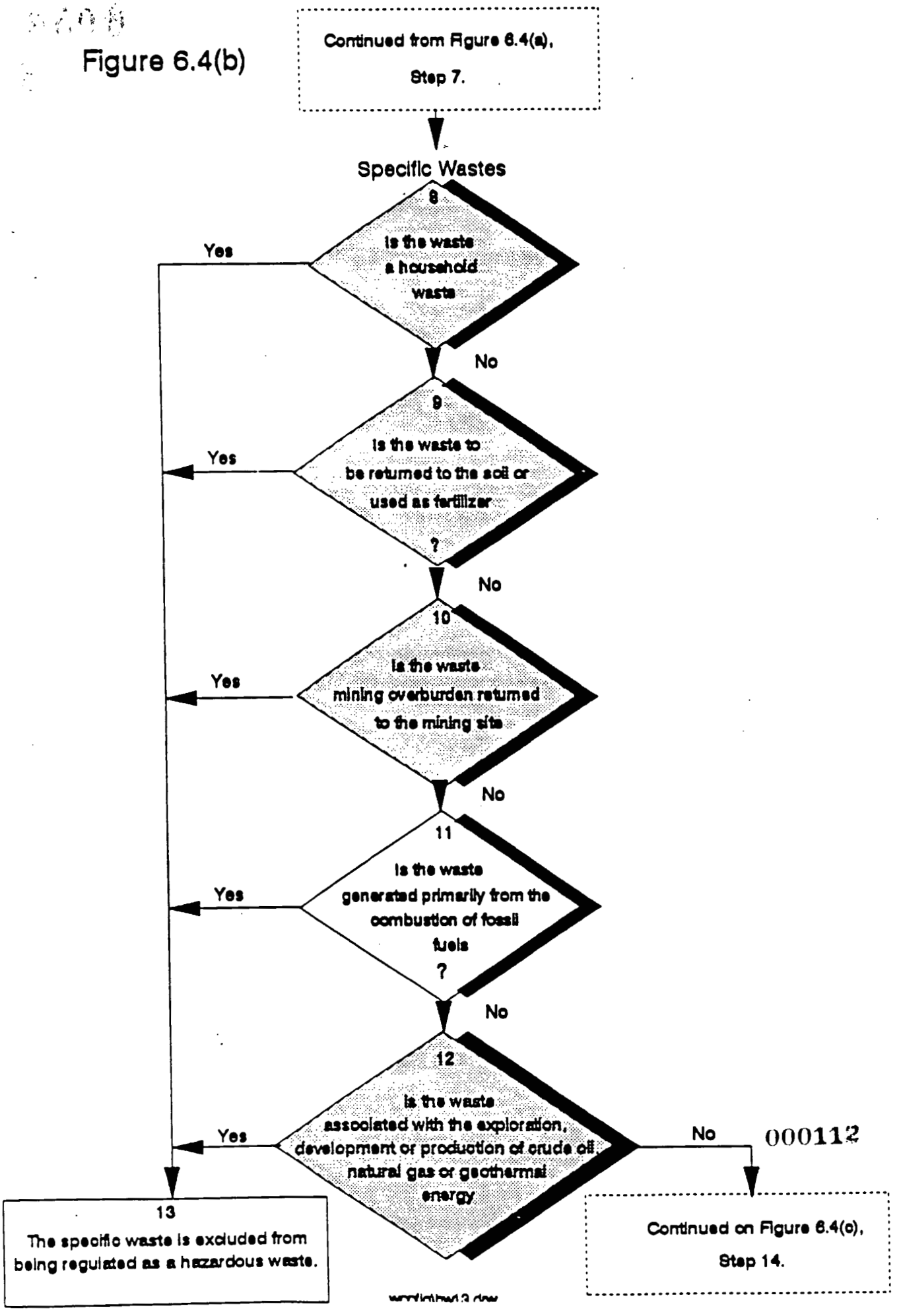
Step 4 If the unit is a surface impoundment, this particular exclusion cannot apply to the waste it contains. OAC 3745-51-04(C).

Step 5 If the unit ceases to be operated for manufacturing, or for the storage or transportation of product or raw materials, then the waste is not eligible for an exemption for remaining in the unit in which it was generated. OAC 3745-51-04(C). EPA does not believe that hazardous waste generated in a manufacturing process unit, product or raw material storage tank, transport vehicle or vessel should be exempted from regulation when the waste remains in the unit after it has ceased to be operated for the primary purpose of manufacturing, or product/raw materials storage or transportation. EPA believes that when operation ceases, the incentive to maintain the integrity of the unit to prevent leaks or other unintended releases is substantially reduced. For units ceasing operation, temporarily or permanently, EPA will allow a reasonable amount of time (90 days) to remove any hazardous waste in the unit. The 90-day time frame is consistent with the 90-day accumulation time allowed for hazardous waste generators under OAC 3745-52-34. Storage of hazardous waste for periods longer than 90 days will result in the waste being fully regulated under RCRA (45 FR 72024; 10/30/80).

Step 6 The waste is exempted from regulation under OAC 3745-50-40 to 3745-50-62 and Chapters 3745-52 to 3745-57, 3745-59, and 3745-65 to 69, and Chapter 119. of the Ohio Revised Code or to the notification requirements of Chapter 3734. of the Ohio Revised Code. OAC 3745-51-04(C).

Step 7 Though this particular exclusion does not apply to the waste, other exclusions are possible. Continue on to Step 8.

Figure 6.4(b)



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6.4 Hazardous Waste Exclusions (cont.)

SPECIFIC WASTES

Step 8 Household waste includes household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel) or reused. **Household waste** means any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunk-houses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). Applicability to a resource recovery facility is addressed in detail in the regulation. OAC 3745-51-04(B)(1).

Step 9 This applies to a solid waste generated by either of the following and returned to the soil as fertilizer:

(i) the growing and harvesting of agricultural crops

(ii) the raising of animals, including animal manures.

OAC 3745-51-04(B)(2).

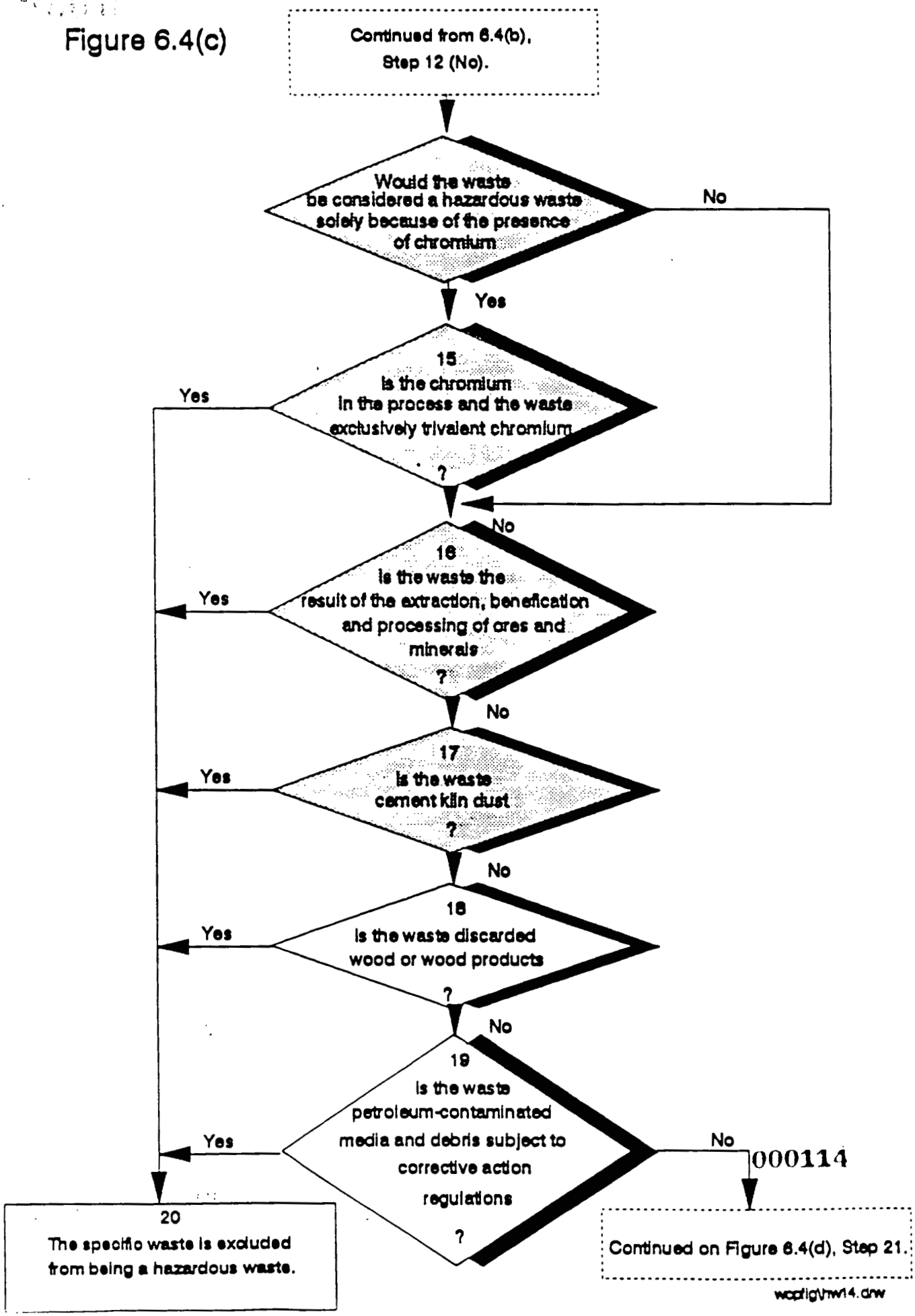
Step 10 Mining overburden is not to be confused with mining wastes, as such wastes are specifically included in the definition of solid waste in section 1004(27) of RCRA. Mining overburden is defined as any material overlying an economic mineral deposit which is removed to gain access to that deposit and is then used for reclamation of surface mines. Reclamation of surface mines will commonly involve the return to the mine site of waste overburden that has been removed to gain access to the deposit (45 FR 33100, 5/19/80). OAC 3745-51-04(B)(3).

Step 11 This applies to fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels. OAC 3745-51-04(B)(4).

Step 12 This applies to drilling fluids, produced waters, and other wastes. OAC 3745-51-04(B)(5).

Step 13 This solid waste is specifically excluded from being a hazardous waste. OAC 3745-51-04(B).

Figure 6.4(c)



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6.4 Hazardous Waste Exclusions (cont.)

Step 14 This applies if the wastes fail the TCLP test for the Toxicity Characteristic because chromium is present or are listed in OAC 3745-51-31 to 33 due to the presence of chromium, which (1) do not fail the test for the Toxicity Characteristic for any other constituent or (2) are not listed due to the presence of any other constituent, and (3) do not fail the test for any other characteristic. OAC 3745-51-04(B)(6)(a).

Step 15 This applies if the following three conditions apply:

- the chromium in the waste is exclusively (or nearly exclusively) trivalent chromium;
- the waste is generated from an industrial process which uses trivalent chromium exclusively (or nearly exclusively) and the process does not generate hexavalent chromium;
- the waste is typically and frequently managed in non-oxidizing environments. OAC 3745-51-04(B)(6)(a)(ii) to (iii).

Specific wastes that may meet these conditions are listed in OAC 3745-51-04(B)(6)(b).

Step 16 This includes coal, phosphate rock and overburden from the mining of uranium ore. The activities encompassed by the term "beneficiation" are listed in the rule. Also listed are all the applicable wastes. OAC 3745-51-04(B)(7).

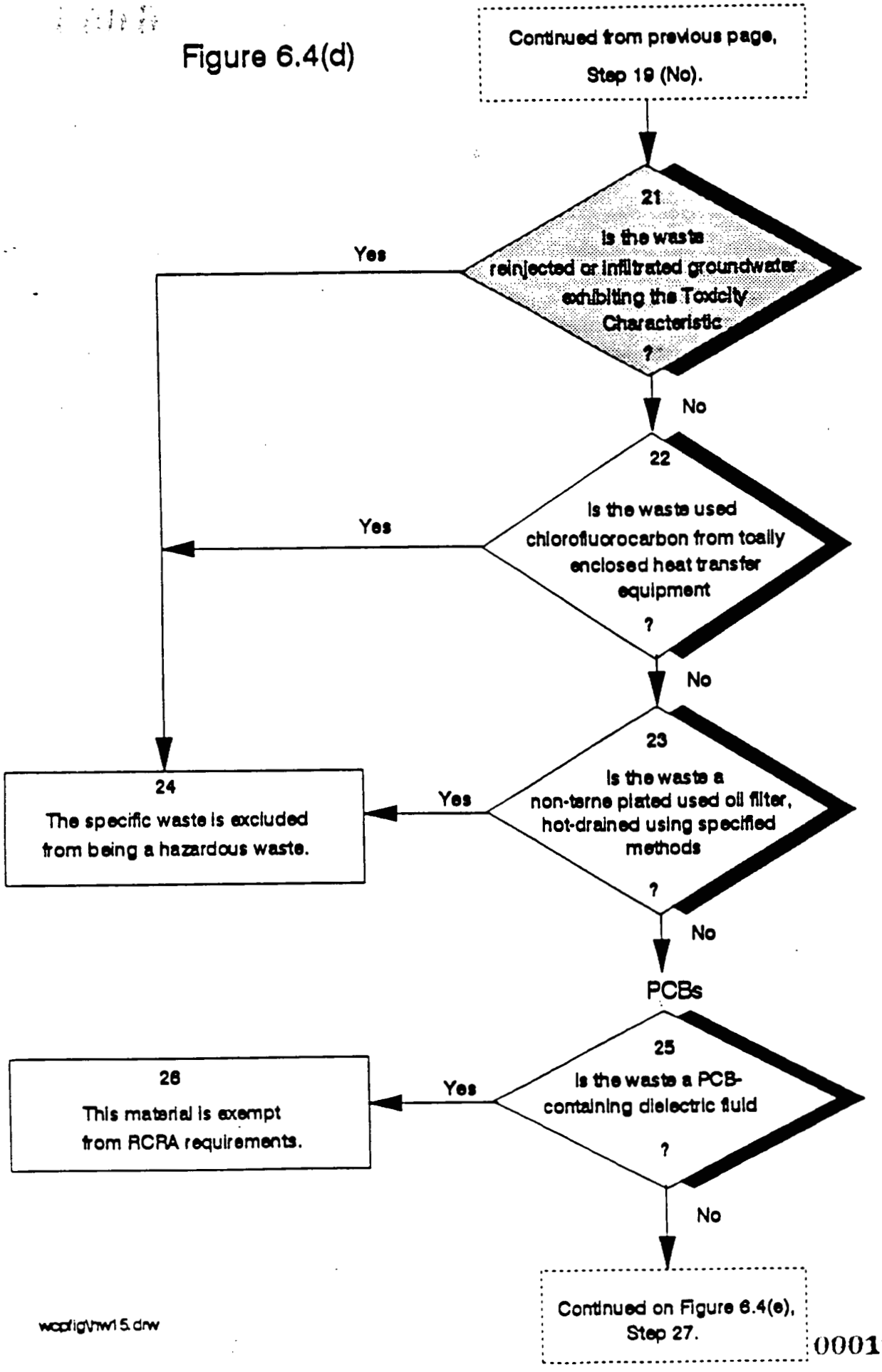
Step 17 This exclusion does not apply to cement kiln dust burned in facilities that burn or process hazardous waste. OAC 3745-51-04(B)(8).

Step 18 This applies to discarded wood or wood products which fail the test for the Toxicity Characteristic for hazardous waste codes D004 - D017, if the waste is generated by persons who use the wood and wood products for their originally intended end use. OAC 3745-51-04(B)(9).

Step 19 This applies to petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic (EPA Hazardous Wastes D018 through D043 only) and are subject to the corrective action regulations under Part 280, for underground storage tanks. OAC 3745-51-04(B)(10).

Step 20 This solid waste is specifically excluded from being a hazardous waste.

Figure 6.4(d)



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6.4 Hazardous Waste Exclusions (cont.)

Step 21 Reinjection or infiltration must be pursuant to existing petroleum hydrocarbon recovery operations undertaken at petroleum refineries and marketing terminals or bulk plants handling crude petroleum and intermediate products. (40 CFR 261.4(b)(11)) NOTE: No corresponding OAC rule yet promulgated.

Step 22 This includes mobile air conditioning systems, mobile refrigeration and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use. (40 CFR 261.4(b)(12). NOTE: No corresponding OAC rule yet promulgated.

Step 23 In order for this exemption to apply, the filter must not have been mixed with listed hazardous wastes and must be hot-drained by one of the following methods:

- Puncturing the filter anti-drain back valve or the filter dome end and hot-draining;
- Hot-draining and crushing;
- Dismantling and hot-draining; or
- Any other equivalent hot-draining method which will remove used oil.

(40 CFR 261.4(b)(15)). NOTE: No corresponding OAC rule yet promulgated.

This is an alloy of tin and lead. This exemption is limited to non-terne plated filters because the terne-plating makes the filter exhibit the toxicity characteristic for lead. The term "hot-drained" means that the oil filter is drained near engine operating temperature and above room temperature (i.e., 60°F) (57 FR 21524; 5/20/92).

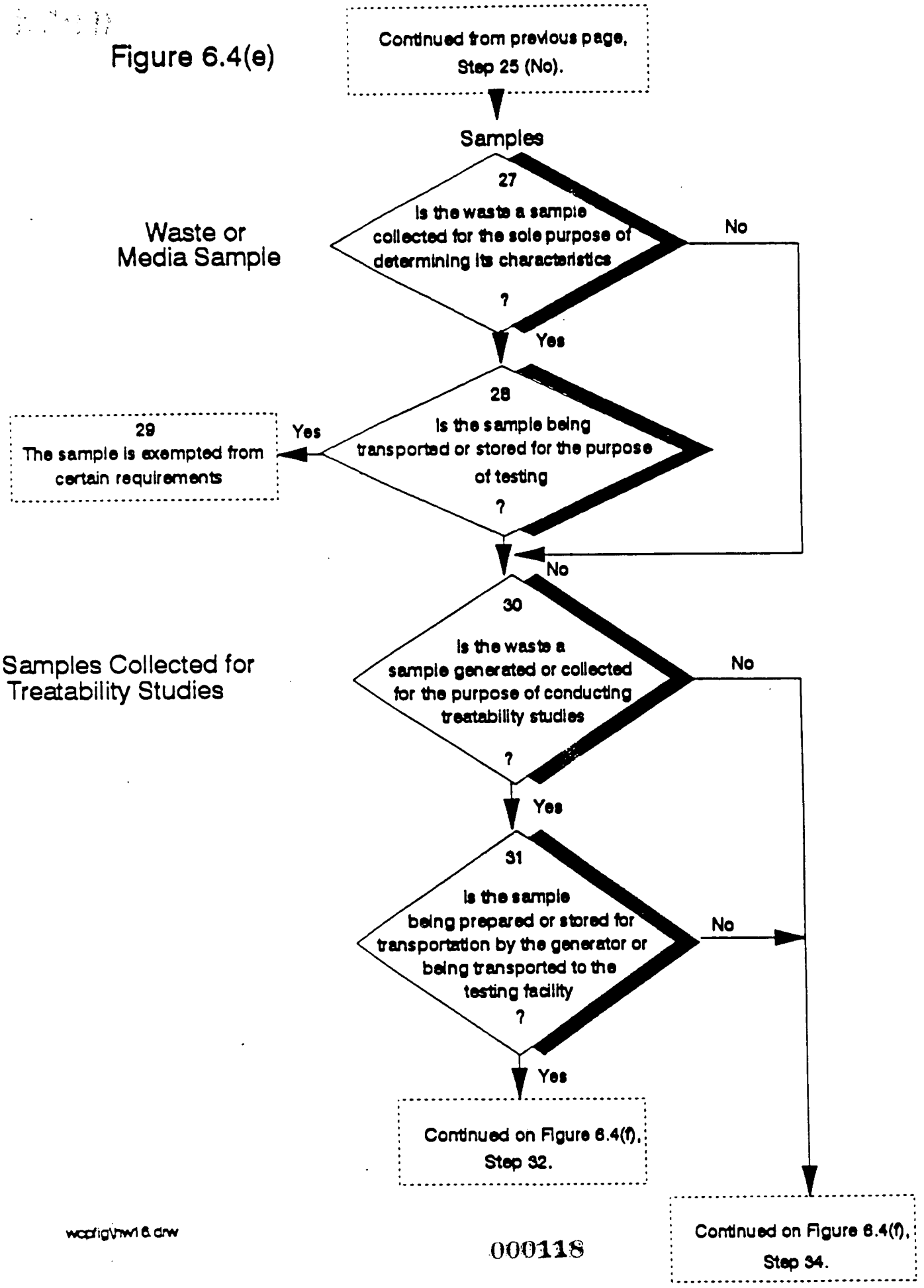
Step 24 This solid waste is specifically excluded from being a hazardous waste.

PCBs

Step 25 This includes electric equipment containing such fluid. This applies to fluids authorized for use and regulated under 40 CFR Part 761 (TSCA) and that are hazardous only because they fail the test for the Toxicity Characteristic (Hazardous Waste Code D018 through D043 only). OAC 3745-51-08.

Step 26 This material is specifically exempted from regulation under RCRA, but is subject to regulation under TSCA.

Figure 6.4(e)



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6.4 Hazardous Waste Exclusions (cont.)

SAMPLES

Waste or Media Sample

Step 27 This applies to a sample of solid waste or a sample of water, soil or air, which is collected for the sole purpose of testing its characteristics or composition. OAC 3745-51-04(D)(1).

Step 28 This applies to a sample being transported to a laboratory for the purpose of testing or back to the sample collector after testing; or being stored

- by the sample collector before transport to a laboratory for testing;
- in a laboratory before testing;
- in a laboratory after testing but before being returned to the sample collector; or
- temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

Certain shipping requirements under OAC 3745-51-04(D)(2) apply. OAC 3745-51-04(D)(1)(a) - (f).

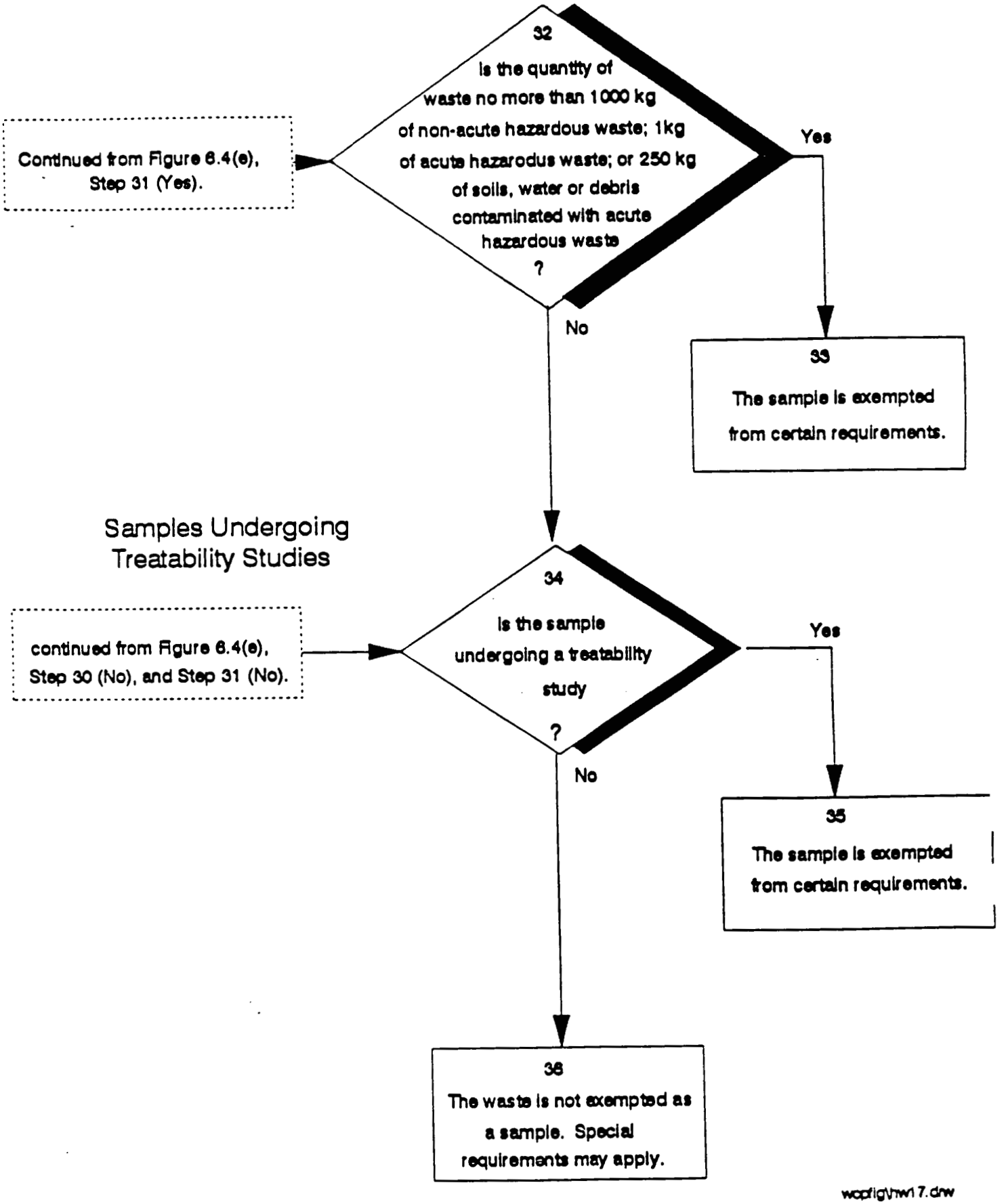
Step 29 The waste is exempted from regulation under OAC 3745-50-40 to 3745-50-62 and Chapters 3745-52 to 3745-57, 3745-59, and 3745-65 to 69, and Chapter 119. of the Ohio Revised Code or to the notification requirements of Chapter 3734. of the Ohio Revised Code., provided the requirements of OAC 3745-51-04(D)(2) are met. These include shipping, packaging, and labelling requirements.

Samples Collected for Treatability Studies

Step 30 **Treatability studies** (OAC 3745-50-10) are studies in which a hazardous waste is subjected to a treatment process to determine: (1) Whether the waste is amenable to the treatment process, (2) pretreatment is required, (3) optimal process conditions, (4) the efficiency of a treatment process, or (5) the characteristics and volumes of residuals. Included, for the OAC 3745-51-04(E) and (F) exemptions, are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies.

Step 31 This applies if the sample is being (i) collected and prepared for transportation by the generator or sample collector; or (ii) accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or (iii) transported to the laboratory or testing facility for the purpose of conducting a treatability study. OAC 3745-51-04(E)(1).

Figure 6.4(f)



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6.4 Hazardous Waste Exclusions (cont.)

Step 32 This applies to wastes used by the generator or sample collector in "treatability studies": no more than 1000 kg of any non-acute hazardous waste, 1 kg of acute hazardous waste, or 250 kg of soils, water, or debris contaminated with acute hazardous waste for each process being evaluated for each generated waste stream. In addition, the mass of each sample shipment does not exceed 1000 kg of non-acute hazardous waste, 1 kg of acute hazardous waste, or 250 kg of soils, water, or debris contaminated with acute hazardous waste. The Ohio EPA Director may grant a variance from the quantity limits of OAC 3745-51-04(E)(2)(a). Procedures are specified in OAC 3745-51-04(E)(3).

Step 33 The sample is exempted from OAC 3745-51 to 53 and the notification requirements of Chapter 3734. of the Ohio Revised Code, nor are such samples included in the quantity determinations of paragraph (D) of rule 3745-52-34 and rule 3745-51-05 of the OAC when the requirements of OAC 3745-51-04(E)(2) are met. These include requirements for packaging, for the receiving laboratory or testing facility, for recordkeeping, and for reporting.

Samples Undergoing Treatability Studies

Step 34 This applies to the laboratory or testing facility conducting such treatability studies (to the extent such facilities are not otherwise subject to RCRA requirements). OAC 3745-51-04(F).

Step 35 The sample is exempted from regulation under OAC 3745-50-40 to 3745-50-62 and Chapters 3745-52 to 3745-57, 3745-59, and 3745-65 to 69, and Chapter 119. of the Ohio Revised Code or to the notification requirements of Chapter 3734. of the Ohio Revised Code, provided it meets the conditions specified in OAC 3745-51-04(F). These conditions include certain notification and reporting requirements, and storage and quantity limitations. A mobile treatment unit (MTU) may qualify as a testing facility subject to these requirements. When a group of MTUs are located at the same site, the limitations of these requirements apply to the entire group of MTUs collectively as if the group were one MTU. OAC 3745-51-04(F).

Step 36 Special requirements are presented in Section 6.5.

Figure 6.5(a) - Special Requirements

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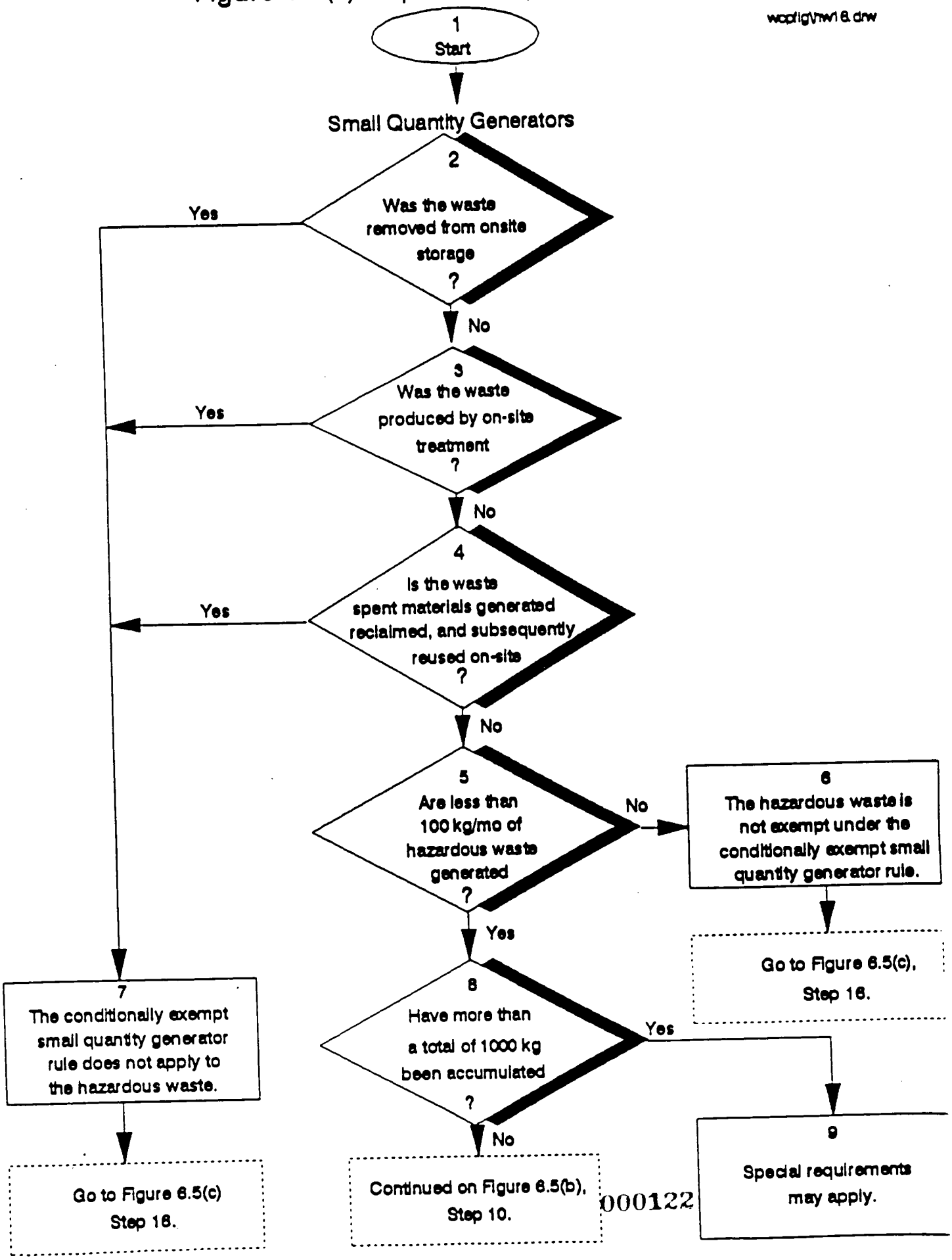


6.5 Special Requirements

Step 1 Start. Requirements for conditionally exempt small quantity generators, hazardous wastes that are recyclable, and residues in empty containers are addressed in this section.

SMALL QUANTITY GENERATORS

Step 2 If the hazardous waste has been removed from on-site storage, it need not be included in the small quantity generator determination. OAC 3745-51-05(D)(1).

Step 3 This applies as long as the hazardous waste that is treated was counted once. Reclamation is included as treatment. OAC 3745-51-05(D)(2).

Step 4 This applies as long as the spent materials have been counted once. OAC 3745-51-05(D)(3).

Step 5 Hazardous waste that is not subject to regulation or that is subject only to OAC 3745-52-11, 3745-52-12, 3745-52-40(C), and 3745-52-41 is not included in the quantity determination. Hazardous waste that is subject to the requirements of OAC 3745-51-06(B) and (C) and 3745-58-30 to 3745-58-46 and 3745-58-60 is included in the quantity determination. OAC 3745-51-05(C).

Step 6 If the amount of waste generated exceeds the quantity limitation, the requirements applicable to only small quantity generators do not apply to this waste. Continue on to Step 16.

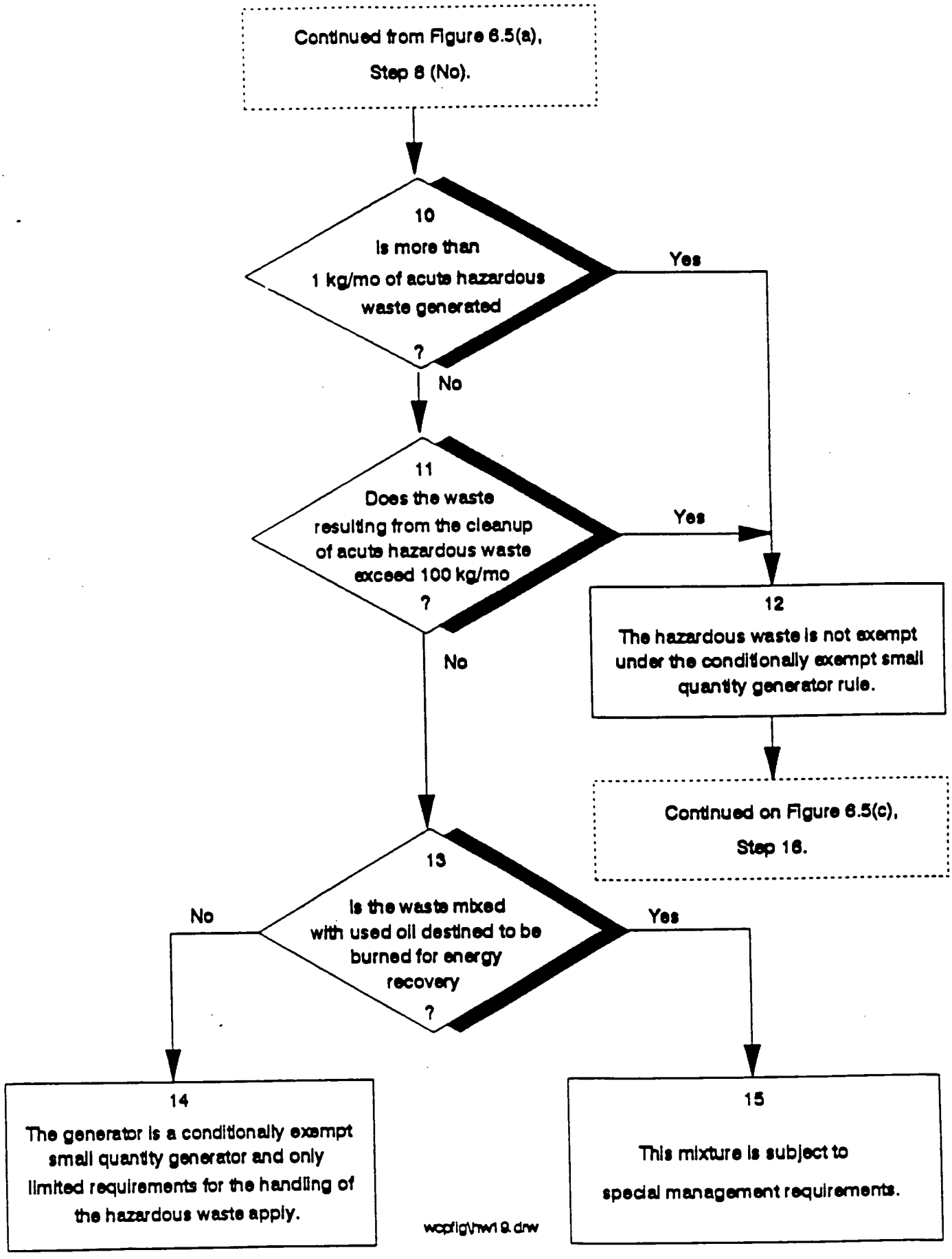
Step 7 These wastes need not be included in the small quantity generator determinations. OAC 3745-51-05(D).

Step 8 The conditionally exempt small quantity generator may accumulate up to 1000 kg of hazardous waste on-site. OAC 3745-51-05(G)(2).

Step 9 If the small quantity generator accumulates at any time more than a total of 1000 kg, all of the accumulated wastes are subject to regulation under the special provisions of OAC 3745-52 applicable to generators of between 100 and 1000 kg/mo as well as the requirements of OAC 3745-53 3745-59, and to 3745-65 to 3745-69, rules 3745-50-40 to 3745-50-62, and the applicable notification requirements of RCRA. The time period of OAC 3745-52-34(D) for accumulation of wastes on-site begins when the accumulated wastes exceed 1000 kilograms. OAC 3745-51-05(G)(2).

Note that exclusions, addressed in Section 6.4, may be applicable.

Figure 6.5(b)


Continued from Figure 6.5(a), Step 8 (No).
10
Is more than 1 kg/mo of acute hazardous waste generated ?
Yes
No
11
Does the waste resulting from the cleanup of acute hazardous waste exceed 100 kg/mo ?
Yes
No
12
The hazardous waste is not exempt under the conditionally exempt small quantity generator rule.
Continued on Figure 6.5(c), Step 16.
13
Is the waste mixed with used oil destined to be burned for energy recovery ?
No
Yes
14
The generator is a conditionally exempt small quantity generator and only limited requirements for the handling of the hazardous waste apply.
15
This mixture is subject to special management requirements.
wcpfig\hw19.drw

6.5 Special Requirements (cont.)

Step 10 Acute hazardous wastes are listed in OAC 3745-51-31 and 3745-51-32 with Hazard Code "H", and OAC 3745-51-33(E). OAC 3745-51-05(E)(1).

Step 11 This applies to residue or contaminated soil, waste, or other debris resulting from the clean-up of a spill, into or on any land or water, of acute hazardous waste. The applicable acute hazardous wastes are listed in OAC 3745-51-31, 3745-51-32 and 3745-51-33(E). OAC 3745-51-05(E)(2).

Step 12 The waste is subject to full regulation under OAC 3745-53 3745-59, and to 3745-65 to 3745-69, rules 3745-50-40 to 3745-50-62, and the applicable notification requirements of RCRA. OAC 3745-51-05(E) and (F). Continued to Step 16.

Step 13 Any material produced from such a mixture by processing, blending, or other treatment is also regulated if it is destined to be burned for energy recovery. OAC 3745-51-05(J).

Step 14 Handling requirements for acute hazardous waste are addressed in OAC 3745-05(F); handling requirements for hazardous waste are addressed in OAC 3745-51-05(G). The generator must comply with 1) OAC 3745-52-11; 2) total accumulation limits (see Steps 8 through 12); and 3) treatment or disposal of the waste either on-site or off-site at a facility that meets the following requirements:

(a) Permitted under rules OAC 3745-50-40 to 3745-50-60;

(b) Operating pursuant to the provisions of division (F) of section 3734.02 of the Ohio Revised Code (interim status);

(c) Authorized to manage hazardous waste by a State with a hazardous waste management program approved under 40 CFR 271;

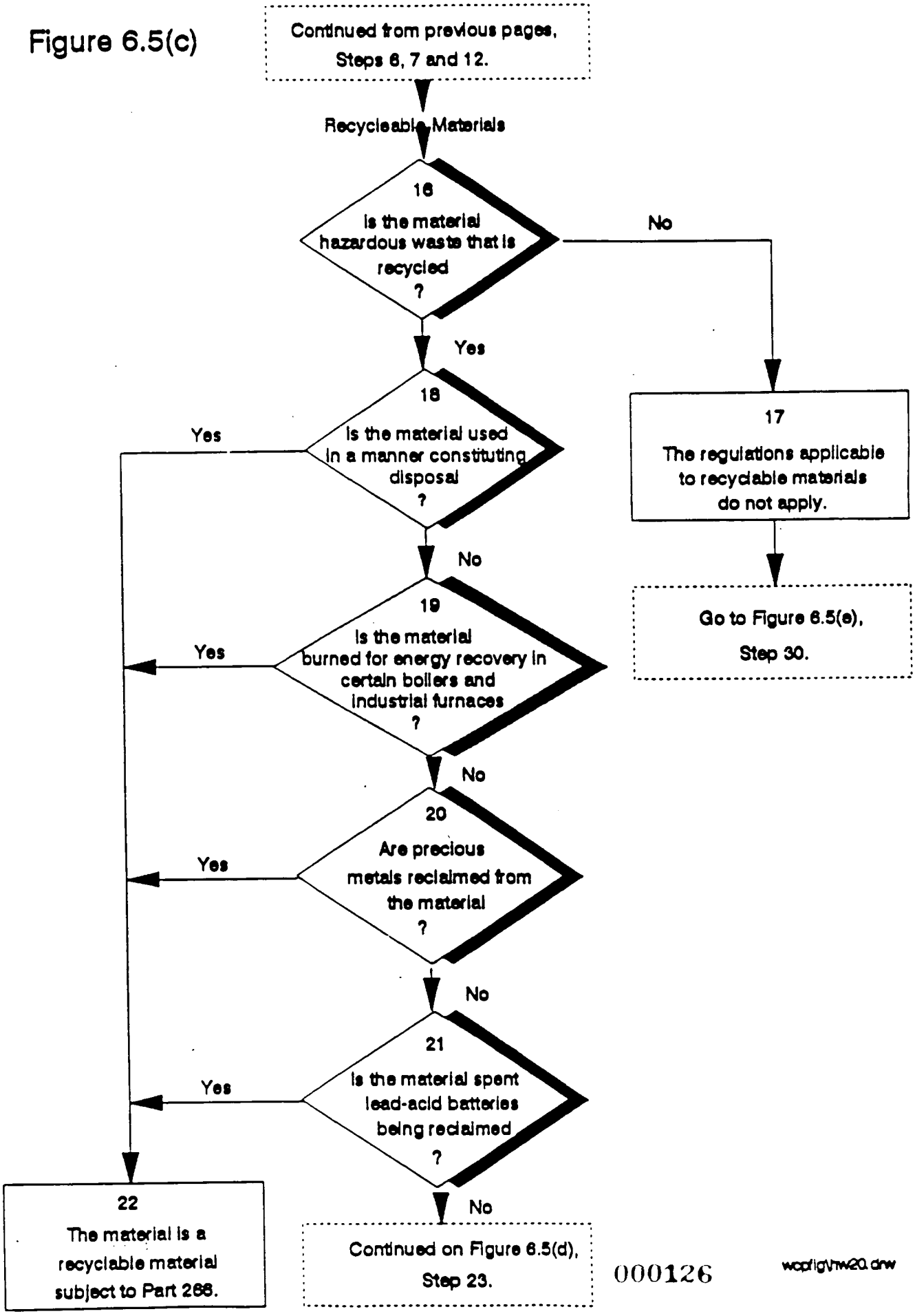
(d) A facility which either (A) beneficially uses or reuses, or legitimately recycles or reclaims its waste; or (B) treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.

OAC 3745-51-05(G)(3)

Hazardous waste subject to the reduced requirements of OAC 3745-51-05 may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitation identified in this section, unless the mixture meets any of the characteristics of hazardous waste. OAC 3745-51-05(H). Note that exclusions, addressed in Section 6.4, may be applicable.

Step 15 The waste is subject to OAC 3745-58-50 to 3745-58-70. Under these regulations, if the used oil fuel meets certain specifications, it is subject only to analysis and record keeping requirements. Otherwise it is subject to restrictions and standards for marketing and burning. OAC 3745-51-05(J). Note that exclusions, addressed in Section 6.4, may be applicable.

Figure 6.5(c)



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6.5 Special Requirements (cont.)

RECYCLABLE MATERIALS

Step 16 Hazardous wastes that are recycled are called "recyclable materials." OAC 3745-51-06(A)(1).

Step 17 If the hazardous waste is not being recycled, it is subject to the full scope of hazardous waste regulations, unless otherwise excluded.

Step 18 Use constituting disposal means application of the material to the land, or used to produce products that are placed on the land OAC 3745-51-06(A)(2)(a).

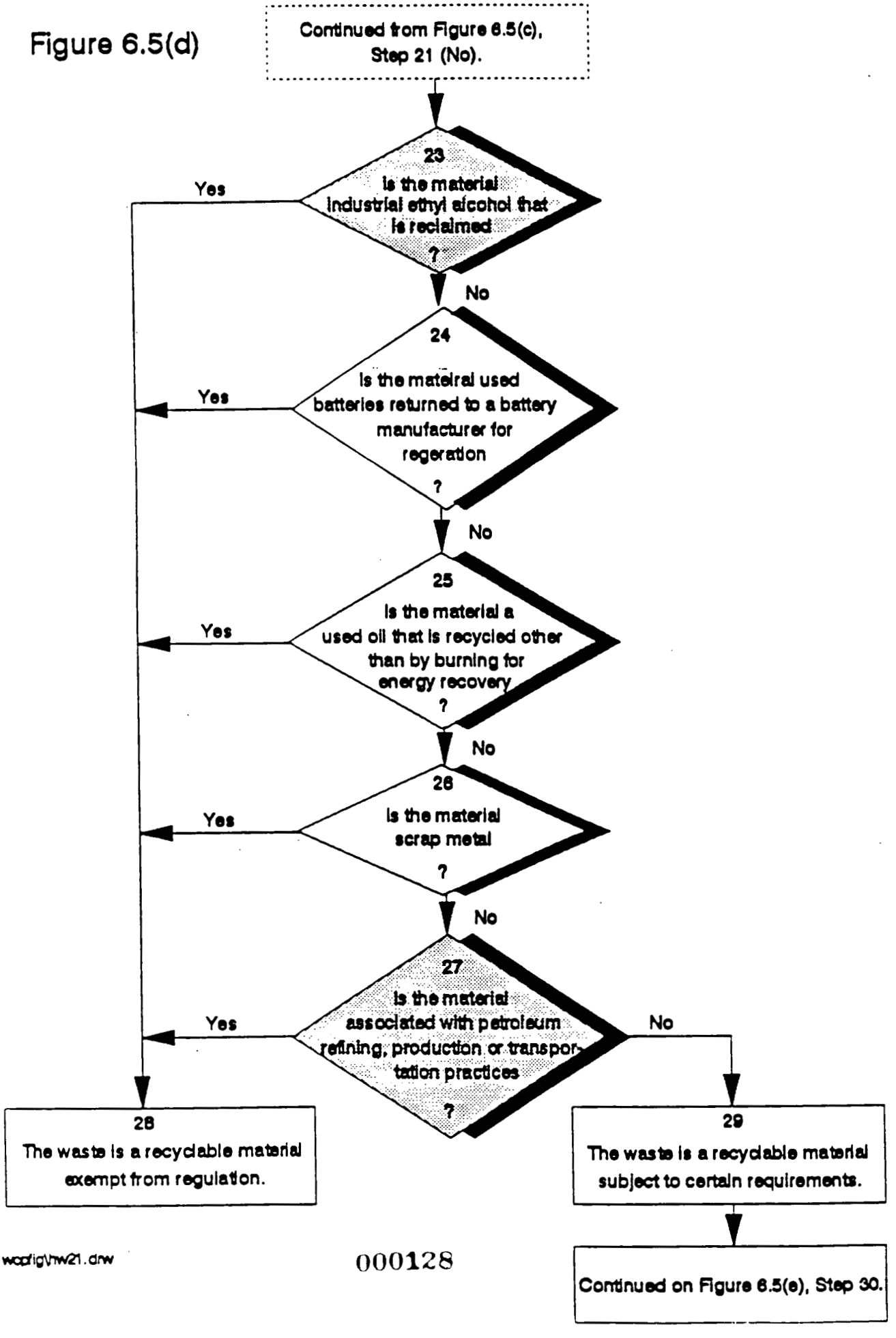
Step 19 "Non-regulated" boilers and industrial furnaces are those not regulated under Subpart O of Part 264 or 265. The material includes used oil that exhibits one or more of the characteristics of hazardous waste. OAC 3745-51-06(A)(2)(b) and (c).

Step 20 This applies to materials reclaimed to recover economically significant amounts of gold, silver, platinum, and other metals identified in OAC 3745-58-60. OAC 3745-51-06(A)(2)(d).

Step 21 This refers to lead-acid batteries being reclaimed to recover lead; not those that are returned to the manufacturer. OAC 3745-51-06(A)(2)(e).

Step 22 The material is not subject to the requirements of OAC 3745-51-06, but is regulated under the applicable rule in OAC 3745-58. Note that exclusions, addressed in Section 6.4, may be applicable.

Figure 6.5(d)



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6.5 Special Requirements (cont.)

Step 23 Special requirements apply for international shipment. OAC 3745-51-06(A)(3)(a)(i) and (ii). **Reclaimed** is defined in OAC 3745-51-01(C)(4) as processing to recover a usable product or regeneration.

Step 24 This includes used battery cells. OAC 3745-51-06(A)(3)(b).

Step 25 This applies to used oil that exhibits one or more of the characteristics of hazardous waste. OAC 3745-51-06(A)(3)(c).

Step 26 Scrap metal is defined at OAC 3745-51-01(C)(6) as bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad cars), which when worn or superfluous can be recycled. OAC 3745-51-06(A)(3)(d).

Step 27 These recyclable materials are described in detail at OAC 3745-51-06(A)(3)(e) to (i).

Step 28 The waste is exempt from OAC 3745-50-40 to 3745-50-62, 3745-52 to 3745-57, 3745-59, and 3745-65 to 69, and the notification requirements of Chapter 3734. of the Ohio Revised Code. OAC 3745-51-06(A)(3).

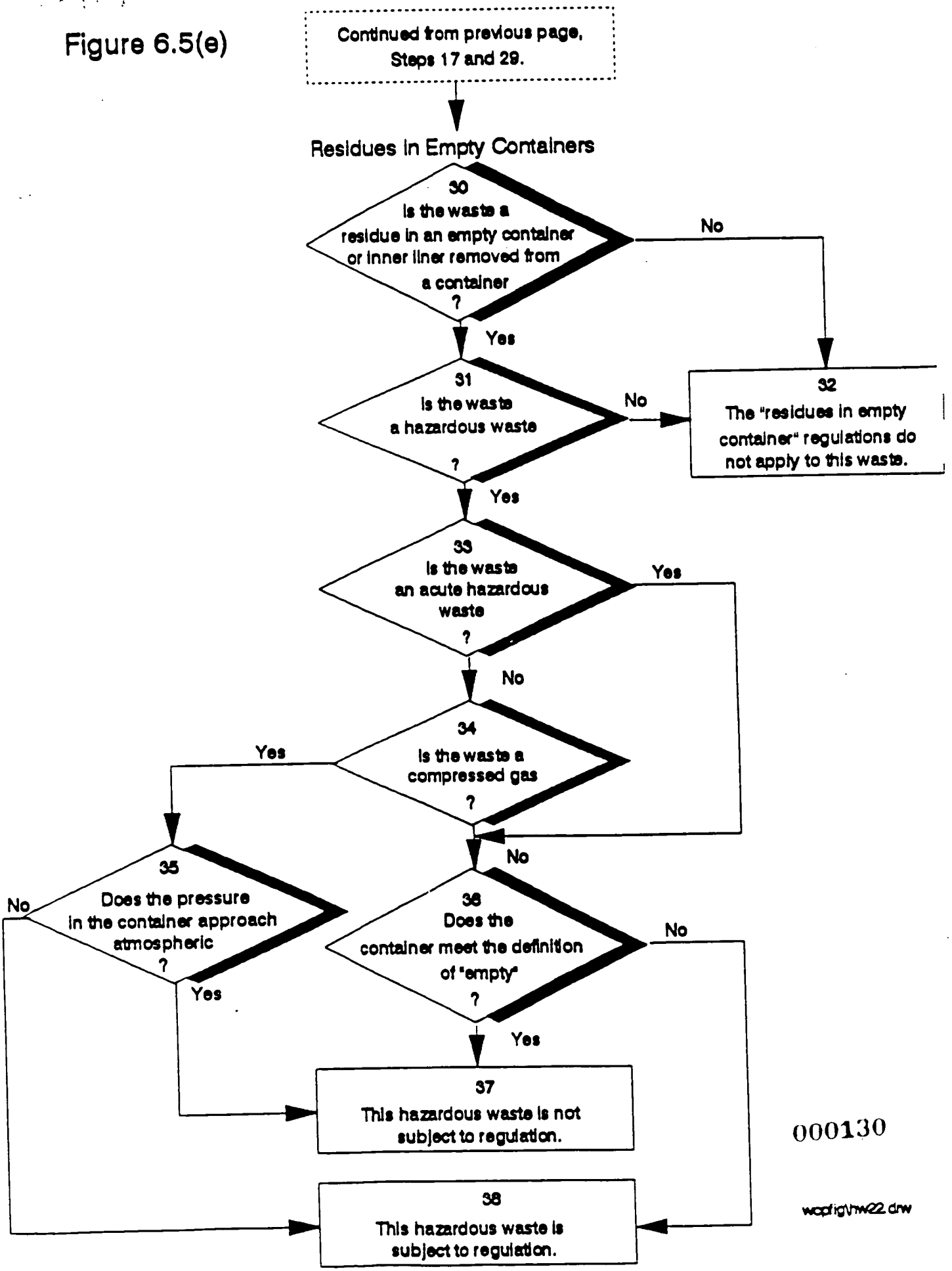
Step 29 Excepting the specific materials referenced in OAC 3745-51-06(A), (for which handling requirements have been identified in this section), generators and transporters of recyclable materials are subject to the standards for generators specified in OAC 3745-52, and the standards for transporters specified in OAC 3745-53, respectively, and the notification requirements of Chapter 3734. of the Ohio Revised Code.

Recyclers of these materials that do not store them first are subject to the manifesting requirements of OAC 3745-65-71 and 3745-65-72, the air emissions standards of Parts 40 CFR 264/265 AA and BB, and the notification requirements of Chapter 3734. of the Ohio Revised Code.

Recyclers of these materials who store them first are subject to the requirements of OAC 3745-54, 3745-55, 3745-58, 3745-59, 3745-65, and 3745-66, and rules 3745-50-40 to 3745-50-62, 3745-56-20 to 3745-56-60, and 3745-67-20 to 3745-67-58 and the notification standards of Chapter 3734. of the Ohio Revised Code. The recycling process itself is only subject to the air emissions standards of 40 CFR 264/265 AA and BB. OAC 3745-51-06(B) and (C).

Exclusions, addressed in Section 6.4, may be applicable. Continue on to Step 30.

Figure 6.5(e)



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6.5 Special Requirements (cont.)

RESIDUES IN EMPTY CONTAINERS

Steps
30 & 32 This is a possible exclusion from regulation that only applies to containers with re of hazardous waste. OAC 3745-51-07.

Step 31 As determined in Section 6.2.

Steps
33 & 36 A container or an inner liner removed from a container that has held any acute ha waste listed in OAC 3745-51-31, 3745-51-32, and 3745-51-33(E) is **EMPTY** if:

(i) The container or inner liner has been triple rinsed using a solvent capable removing the commercial chemical product or manufacturing chemical intermediate;

(ii) The container or inner liner has been cleaned by another method that ha: shown in the scientific literature, or by tests conducted by the generator achieve equivalent removal; or

(iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate wi container, has been removed. OAC 3745-51-07(B)(3).

OAC 3745-51-07(B)(1). A container or an inner liner removed from a container held any hazardous waste, except a waste that is a compressed gas or that is id as an acute hazardous waste, is **EMPTY** if:

(i) All wastes have been removed that can be removed using the practices co employed to remove materials from that type of container, e.g., pouring, pu and aspirating, and

(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom c container or inner liner, or

(iii) For containers less than or equal to 110 gallons in size, no more than 3 pe weight of the total capacity of the container remains in the container or inr or, for containers greater than 110 gallons, no more than 0.3 percent rema

Steps
34 & 35 A container that has held a hazardous waste that is a compressed gas is **EMPTY** the pressure in the container approaches atmospheric. OAC 3745-51-07(B)(2).

Step 37 The waste is not subject to regulation under OAC 3745-50-40 to 3745-50-62, to 3745-57, 59, and 3745-65 to 69, and notification requirements of Chapter 3

Step 38 (40 CFR 261.7). If the container does not meet the definition of "empty", haza waste residues contained therein <u>are</u> regulated as hazardous wastes under RCR that exclusions, addressed in Section 6.4, may apply.

6.6 Land Disposal Restrictions (LDR)

[This section in process.]

6.7 Completing Hazardous Waste Worksheets

This section provides the implementing guidance for completing the worksheets that document a materials status with respect to the definition of hazardous waste. This guidance and the associated worksheets cover the relevant waste identification criteria related wastes expected to be generated at the FEMP. In the unlikely event that a situation arises that is not covered by the guidance or worksheets, the FME evaluators access additional resources for guidance (including onsite resources and contact with the Regulatory Agencies) and supplement the waste characterization worksheets with the additional required documentation in the waste characterization file.

6.7.1 "Exclusions to the Definition of Hazardous Waste - Worksheet"

This section provides the site specific guidance with which to evaluate solid waste at the FEMP to determine if it are excluded from the definition of hazardous waste under the hazardous waste management regulations (i.e., the Ohio Administrative Code (OAC) or the Code of Federal Regulations (CFR), as applicable). Evaluation criteria are provided for each entry on the "Exclusions to the Definition of Hazardous Waste - Worksheet," Form 6.7(a).

Excluded AEA Materials

Two sources for guidance that have been used for application of this exclusion include: 1) DOE Final Rule on Radioactive Waste; Byproduct Material (52 FR 15937; May 1, 1987) and 2) Joint EPA/NRC Guidance on the Definition and Identification of Commercial Mixed Low-Level Radioactive and Hazardous Waste (OSWER Policy Directive 9432.00-2; March 2, 1987).

The DOE Byproduct Rule "provides that only the actual radionuclides in DOE waste streams will be considered byproduct materials. The non-

radioactive components of those waste streams, under the final rule, will be subject to regulation under RCRA to the extent that they contain hazardous components." (52 FR 15938). Similarly, the joint EPA/NRC guidance specifies that "except for certain ores containing source material, which are defined as source in 10 CFR 40.4(h), and uranium and thorium mill tailings or wastes, NRC and EPA interpret the definitions of source, special nuclear, and byproduct materials to include only the radioactive elements themselves."

Materials at the FEMP that are potentially excluded because the radionuclide portion exhibits the a characteristic include uranium or thorium metal fines (e.g., chips and turnings) that may exhibit the characteristic of reactivity. Note that while these materials may be excluded from the definition of hazardous waste, they may not meet the NVO-325 Waste Acceptance Criteria (WAC) for pyrophorics. See Section 13.1.1.

Materials at the FEMP that may be excluded from regulation because they are considered tailings and thus excluded from regulation as hazardous waste include the contents of the K-65 silos and the certain wastes in the containerized inventory (e.g., thorium tailings identified as "brazilian sludge").

While these materials are not regulated strictly regulated as hazardous waste, they may be required to be managed in accordance with the hazardous waste rules if they are determined to be "relevant and appropriate" under the National Contingency Plan (NCP) requirements for considering Applicable and Relevant and Appropriate Regulations (ARARs).

Mixtures of Wastewaters Subject to CWA and Certain Hazardous Waste

Certain mixtures of hazardous waste and wastewaters regulated under the CWA are excluded from the definition of hazardous waste provided the conditions listed on the worksheet are met. The FEMP has reviewed facility records and determined that these conditions have been met in the past at the site (See **Need Reference to WWTS Exclusion Calculations**. Further, continued oversight of the onsite wastewater treatment facility operations will ensure that the facility continues to meet the conditions for this exclusion to apply.

Note, however, that this exclusion is only applicable when these wastes are added to the wastewater treatment system. Prior to that point, they are fully regulated as hazardous waste. In addition, there are certain recordkeeping and reporting requirements under the Land Disposal Restriction (LDR) rules for hazardous wastes which are ultimately managed under this exclusion (See Section 6.6).

Wastes Generated from the Combustion of Coal or Other Fossil Fuels

This exclusion applies to the fly ash at the FEMP. This exclusion does not apply to mixtures of these excluded wastes and other hazardous wastes (e.g., fly ash mixed with hazardous waste).

Discarded CCA Treated Wood

Discarded wood treated with copper-chromium arsenicals (CCA) is excluded from the definition of hazardous waste if it fails one or more of the original EP Toxicity Constituents (i.e., eight metals, six pesticides) and is not a hazardous waste for any other reason. This exclusion was intended to apply to (inorganic) treated wood products that fail the TC due to the wood preserving treatment applied to the original wood product. This exclusion does not apply to CCA treated wood that fails the TC for any of the 25 organic constituents or that fails the TC for any of the original 14 EP Toxicity constituents that are not attributable to the CCA. OSWER Policy Directive 9441.1991(11).

Petroleum-contaminated media and debris

This exclusion only applies to media an ddebris contaminated with the 25 organic constituents added by the TC rule when these constituents are attributable to the petroleum product. The media an debris must be generated during corrective actions under the underground storage tank rules.

CFCs Reclaimed for Further Use

If not reclaimed, CFCs removed from these units must betested to determine if they fail the TC.

Non-terne Plated Used Oil Filters

The onsite garage has apparatus for hot-draining of non-terne oil filters to meet this exclusion.

Transitory Exclusions to the Definition of Hazardous Waste

These three exclusions are transitory in nature and only apply during certain stages of sample management. These exclusions do not apply to the waste when it is managed outside the scope of the exclusion or when it is ultimately discarded. Page 2 of the "Exclusions to the Definition of Hazardous Waste - Worksheet" is used to document materials status with respect to these exclusions.

EXCLUSIONS TO DEFINITION OF HAZARDOUS WASTE - WORKSHEET

MEF Number: _____ Rev No.: _____

The RCRA regulations provide specific exclusions to the definition of hazardous waste (i.e., materials that may be regulated as solid waste, but are excluded from regu as hazardous waste). Section A provides for documentation of specific exclusions that potentially apply to waste streams at the FEMP.

A. EXCLUSIONS TO THE DEFINITION OF HAZARDOUS WASTE

Exclusion Applies	Applicable Exclusion
___yes ___no	It is source material, special nuclear material, or by-product material, as defined by the Atomic Energy Act of 1954, as amended, 42 U.S. C. 2011 et seq., or other radionuclides that exhibit a characteristic of hazardous waste that is solely attributable to the radionuclide portion of the waste. [OAC 3745-51-03(A)(2)(d)]
___yes ___no	Is the waste a mixture of wastewater, the discharge of which is subject to regulation under either section 402 or 307(b) of the CWA, and: ___ One or more of the following spent solvents listed in OAC 3745-51-31 - carbon tetratchloride, tetrachloroethylene, trichloroethylene - provided that the maximum total weekly usage of these solvents (other than amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 1 ppm; or ___ One or more of the following spent solvents listed in OAC 3745-51-31 - methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents - provided that the maximum total weekly usage of these solvents (other than amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system doe snot exceed 25 ppm; or ___ A discarded commercial chemical product, or chemical intermediate listed in OAC 3745-51-33, arising from *de minimis* losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For the purposes of this exclusion *de minimis* losses include those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinseate from empty containers or from containers that are rendered empty by that rinsing; or ___ Wastewater resulting from laboratory operations containing toxic (T) wastes listed in OAC 3745-51-31 to 3745-51-33, provided that the annualized average flow of laboratory wastewater does not exceed one percent of total flow into the headworks of the facility's wastewater treatment or pretreatment system, or provided the wastes' combined annualized average concentration does not exceed 1 ppm in the headworks of the facility's wastewater treatment of pretreatment system. Toxic wastes used in the laboratories that are demonstrated not to be discharged to wastewater are not included in this calculation. [OAC 37455-51-03(A)(2)(e)(i), (ii), (iv), and (v), respectively.
___yes ___no	Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, generated primarily from the combustion of coal or other fossil fuel: [OAC 3745-51-04(B)(4)/40 CFR 261.4(b)(4)]
___yes ___no	Solid waste which consists of discarded wood or wood products which fails the TC solely for one or more of the original EP Toxicity constituents (i.e D004 - D017) and which is not a hazardous waste for any other reason, if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use. [OAC 3745-51-04(B)(9) OSWER Policy Directive #]
___yes ___no	Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) and are subject to the corrective action regulations under 40 CFR 280. [40 CFR 261.4(b)(10)]
___yes ___no	Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, a commercial and industrial air conditioning and refrigeration system that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use. [40 CFR 261.4(b)(12)]
___yes ___no	Non-terne plated used oil filters that are not mixed with waste listed in subpart C of this part if these oil filters have been gravity hot-drained using one of the following methods: ___ Puncturing the filter anti-drain back valve or the filter dome end and hot draining; ___ Hot-draining and crushing; ___ Dismantling and hot-draining; ___ Any other equivalent hot-draining method which will remove used oil. [40 CFR 261.4(b)(

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___ Additional information attached to support exclusion to the definition of hazardous waste. [See attached narrative]

The RCRA regulations provide specific exclusions to the definition of hazardous waste for certain materials that are managed in a specified manner prior to be: discarded, but that cease to operate when the material is managed outside of the scope of these exclusions and that do not apply to the material when it is ultimat discarded. Section A provides for documentation of those exclusions that potentially apply to waste streams at the FEMP.

A. EXCLUSIONS TO THE DEFINITION OF HAZARDOUS WASTE THAT ARE TRANSITORY IN NATURE

Exclusion Applies	Applicable Exclusion
___yes ___no	The material is a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine characteristics or composition and: (a) The sample is being transported to a laboratory for the purpose of testing; or (b) The sample is being transported back to the sample collector after testing; or (c) The sample is being stored by the sample collector before transport to a laboratory for testing; or (d) The sample is being stored in a laboratory before testing; or (e) The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or (f) The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until the conclusion of a court case or enforcement action where further testing of the sample may be necessary). To qualify the sample collector shipping samples to a laboratory or the laboratory returning samples to the sample collector must comply with the requirements of OAC 3745-51-04(D)(2) stipulating compliance with US DOT, USPS, or other applicable shipping requirements, sample documentation and packaging requirements.. NOTE: This exclusion is only valid as long as the conditions listed above are met.
___yes ___no	The material is a sample of a hazardous waste collected so that it can be subjected to a treatment process to determine: (1) whether the waste is amenable to the treatment process, (2) what pretreatment (if any) is required, (3) the optimal process conditions needed to achieve the desired treatment, (4) the efficiency of a treatment process for a specific waste or wastes, or (5) the characteristics and volumes of residuals from a particular treatment process and: (a) The sample is being collected and prepared for transportation by the generator or sample collector; (b) The sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or (c) The sample is being transported to the laboratory or testing facility for the purpose of conducting the treatability study. To qualify for this exemption, the generator or sample collector must comply with the requirements of OAC 3745-51-04(E)(2): (a) No more than 1000 kg total; 250 kg soils, water or debris contaminated with acute HW; or one kg acute HW; per waste stream, per process being evaluated; (b) Same mass limits as (a) imposed on each shipment of treatability study sample; (c) Shipping in accordance with US DOT, USPS, or applicable shipping requirements - additional information when shipped otherwise; (d) Sample shipped to a facility exempt under OAC 3745-51-04(F) or with appropriate permit or interim status; (e) The generator or sample collector keeps specified records for three years following completion of the treatability study; (f) The generator reports specific information on treatability study waste in its annual report. NOTE: This exclusion is only valid as long as the conditions listed above are met.
___yes ___no	The material is a sample undergoing a treatability study at a laboratory or testing facility and the facility meets the following eleven specific criteria identified under OAC 3745-51-04(F): (1) The facility has notified the Regional Administrator (RA) or State Director 45 days prior to conducting treatability studies; (2) The facility has a US EPA Identification Number; (3) No more than 250 kg of "as recieved" hazardous waste is subjected to initiation of treatment in a single day; (4) "As recieved" waste stored less than 1000 kg total; 500 kg soils, water or debris contaminated with acute HW; or one kg acute HW; (5) No more than 90 days has elapsed since the treatability study for the sample was complete or no more than one year has elapsed since the generator or sample collector shipped the sample to the facility, whichever date comes first; (6) The treatability study does not involve "placement" on the land or open burning of HW; (7) The facility maintains specific records that show compliance with the treatment rate limits and the storage quantity and time limits; (8) The facility keeps, onsite, a copy of the treatability study contract and all shipping papers for treatability samples; (9) The facility completes required reports to the Regional Administrator or State Director; (10) The facility either provides for disposal of unused samples and treatment residues in accordance with the hazardous waste rules, or returns unused samples and treatment residues to the sample originator under the exclusion at OAC 3745-51-04(E); (11) The facility notifies the RA or State Director by letter when the facility no longer plans to conduct treatability studies. NOTE: This exclusion is only valid as long as the conditions listed above are met.

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6.7.2 "Hazardous Waste Listings - Worksheet"

This section provides implementing guidance for identifying listed hazardous waste at the FEMP and completing the "Hazardous Waste Listings - Worksheet," Form 6.7(b).

Listed Spent Solvents (F001 - F005)

The FEMP historically used solvents listed in F001 - F005. The three largest volume solvents used during production were 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene (perchloroethylene). Additional uses of listed solvents to support facility operations included uses of thinners and strippers in the paint shop and during painting operations, and parts cleaning and degreasing operations conducted during maintenance activities. Finally, the onsite laboratory historically used and still uses listed solvents to carry out analytical procedures and for glassware cleaning.

Spent solvents at the FEMP have generally been managed as separate waste streams and identified as solvents when entered into the lot marking system (Material Type 013). However, prior to mixed waste regulation spent solvents were on occasion mixed with other liquid waste streams (e.g., used oil) and not identified as solvent waste.

Certain conditions must be met to determine that a waste meets the listing description in F001 - F005. First, the solvent must be used for its solvent properties. If the solvent is used as an ingredient or reactant in a commercial chemical product, then the solvent is not regulated under F001 - F005. For example, solvent based paints, inks, and adhesives being disposed of would not be regulated under a spent solvent listing (these materials may, however, exhibit one or more of the characteristics). Second, the solvent mixture must have contained, prior to use, a total of ten percent or more (by volume) of the listed constituents. The mere presence of a listed spent solvent constituent is not sufficient to identify a waste as a listed spent solvent waste. Knowledge must exist to determine that a material meets the conditions of the listing descriptions. The following guidance provides the graded approach to identification of listed spent solvents in light of historical materials management practices at the

FEMP.

F003 covers certain non-halogenated solvents and is only listed for ignitability, unless it was part of a solvent mixture that contained, prior to use, 10% or more (by volume) of one of the solvents listed in F001, F002, F004, or F005, in which case it is listed for both ignitability and toxicity. Under the definition of hazardous waste, 261.3(a)(2)(iii), if a mixture of a waste that is listed in Subpart D solely because it exhibits one or more of the characteristics of hazardous waste no longer exhibits that characteristic, then it is not considered a hazardous waste. Note that dilution of characteristic ignitable wastes is prohibited under land disposal restriction regulation unless the waste has less than 10% TOC.

Materials may be identified as spent solvents based on lot marking information, source or site of generation (e.g., contents of a solvent storage tank), or based on known materials management (e.g., solvent contaminated rags/wipes). Materials identified as spent solvents in this manner are sampled and analyzed to identify specific spent solvent constituents and to determine the materials status with respect to the Land disposal Restrictions (LDR) treatment standards.

When process knowledge does not initially indicate spent solvent usage, but analytical data show spent solvent constituents in a waste stream, process knowledge is reviewed to identify *reasonable* management (or mismanagement) scenarios whereby the waste was mixed with, derived from, or came to contain a spent solvent. Review of process knowledge includes accessing spill reporting and upset condition logs or interviewing site personnel to determine if there is any reasonable evidence to support decision making. For example, soil samples showing elevated levels of spent solvent constituents at the edge of a storage pad used to store spent (used) solvents may support the determination that the media contain a listed spent solvent. Conversely, soil samples with elevated levels of spent solvent constituents from an area where solvents were neither stored nor used and where there is no record of spills may support the determination that the media (soils) do not contain a listed spent solvent.

A graded approach is used to evaluate waste with analytical results that

show spent solvent constituents. Lacking initial information on potential mixing with a spent solvent, the higher the level of spent solvent constituent in the waste, the more important it becomes to identify the source of the constituent. Above a certain level there exists a rebuttable presumption that mixing has occurred. That is, unless there is information to show that the constituent did not arise from mixing with a spent solvent, the waste will be determined to be regulated as a spent solvent waste. For example, in light of knowledge of past management practices, a used oil determined to have greater than 1,000 ppm of 1,1,1-trichloroethane will be determined to be mixed with a spent solvent (See 50 FR 49176 for EPA discussion of rebuttable presumption).

Other Listed Waste from Non-specific and Specific Sources

Based on a review of current and historical FEMP operations, no other listed waste from non-specific sources (F listed waste in OAC 3645-51-31) or specific sources (K listed waste in OAC 3745-51-32) have been or are anticipated to be generated onsite. Each waste stream characterized, however, is evaluated to determine if it is a waste from a source not previously identified that meets a listing description in OAC 3745-51-31 to 32 or a newly promulgated HSWA listing under 40 CFR 261.31 to 32.

Listed Discarded Commercial Chemical Products

The laboratory is the most common source for discarded commercial chemical products at the FEMP. These wastes generally result from the cleanout of a spill of the unused product or a decision to discard outdated chemicals from the laboratory inventory. Discarded commercial chemical products are only regulated as hazardous waste where the chemical listed in OAC 3745-51-33 is the sole active ingredient. The commercial chemical products listings only apply to these materials if and when they are discarded. The listings are not applicable to wastes which incidentally contain substances listed in OAC 3745-51-33(E) and (F). [OSWER PD 9444.01(80) and 9444.01(81)]

HAZARDOUS WASTE LISTINGS - WORKSHEET

MEF Number: 6054 *Rev No.:* ____

This worksheet documents evaluation of this material to determine if it is a listed hazardous waste under 40 CFR 261 Subpart D/OAC 3745-51-30 to 33.

Usage of listed spent solvents at the facility requires explicit evaluation of each waste stream to determine if it meets the listing description of a spent solvents or i regulated as a listed spent solvent by virtue of the mixture or derived from rules. No other listed hazardous waste from non-specific (F-listed; 40 CFR 261.31/OAC 3745 51-31) or specific sources (K-listed; 40 CFR 261.32/OAC 3745-51-32) have been identified at the FEMP to date, however, each waste stream must also be explicitl evaluated to determine if any other F or K listings are potentially applicable. Certain wastes at the FEMP meet the listing description for discarded commercial chemic products, off-specification species, container residues, and spill residues thereof (P or U-listed; 40 CFR 261.33/OAC 3745-51-33) either directly or by virtue of the mixtur or derived from rules. Therefore each waste stream must be explicitly evaluated to determine if any P or U listings apply to the waste stream. These evaluations ar documented in sections A through C below.

A. LISTED SPENT SOLVENTS (F001-F005)

This waste stream does / does not (circle one) contain spent solvents listed under 40 CFR 261.31/OAC 3745-51-31 that were used for their solvent properties and contained, before use, a total of ten percent or more (by volume) of the following solvent constituents, or meets the listing description by virtue of the mixture or derived from rule with regards to the following spent solvents:

___ acetone (F003)	___ methylene chloride (F001, F002)
___ benzene (F005)	___ methyl ethyl ketone (F005)
___ n-butyl alcohol (F003)	___ methyl isobutyl ketone (F003)
___ carbon disulfide (F005)	___ nitrobenzene (F004)
___ carbon tetrachloride (F001)	___ 2-nitropropane (F005)
___ chlorobenzene (F002)	___ pyridine (F005)
___ cresols (and cresylic acid) (F004)	___ tetrachloroethylene (F001, F002)
___ cyclohexanone (F003)	___ toluene (F005)
___ 1,2-dichlorobenzene (also called ortho-dichlorobenzene) (F002)	___ 1,1,1-trichloroethane (F001, F002)
___ 2-ethoxyethanol (also called ethylene glycol monoethyl ether) (F005)	___ 1,1,2-trichloroethane (F002)
___ ethyl acetate (F003)	___ 1,1,2-trichloro-1,1,2-trifluoroethane (F002)
___ ethyl benzene (F003)	___ trichloroethylene (F001, F002)
___ ethyl ether (F003)	___ trichlorotrifluoromethane (F002)
___ isobutanol (F005)	___ xylene (F003)
___ methanol (F003)	

Rationale for determination:

B. OTHER LISTED WASTES FROM NON-SPECIFIC AND SPECIFIC SOURCES (F006 and up, K-Listed Wastes

This waste stream does / does not (circle one) meet the listing description of a listed hazardous waste from a non-specific or specific source (i.e., non-spent solvent F-listed or K-listed waste), either directly or by virtue of the mixture or derived from rules.

Hazardous waste codes identified, if any:

Rationale for determination:

C. LISTED DISCARDED COMMERCIAL CHEMICAL PRODUCTS

This waste stream does / does not (circle one) meet the listing description of a listed discarded commercial chemical products, off-specification species, container residues, and spill residues thereof (i.e., P and U-listed wastes), either directly or by virtue of the mixture or derived from rules.

Hazardous waste codes identified, if any:

Rationale for determination:

000141

6.7.3 "Hazardous Waste Characteristics - Worksheet"

This section provides guidance for completing the "Hazardous Waste Characteristics - Worksheet," Form 6.7(c).

Ignitability (D001)

Ignitable liquids: Flash point data are required for a definitive determination on flash point in all cases. When sufficient information exists, materials hould be identified as ignitable while analytical data are pending. Such information may be obtained from MSDS or standard references when the material can be identified. Materials that should be considered for ignitability include F-listed solvents, non F-listed solvents (e.g., acetonitrile from the lab), solvent based paints, paint thinners, gasoline, kerosene, and certain mineral spirits.

Solids having a flash point of less than 140°F do not meet the criteria for ignitable wastes; this part of the characteristic only applies to liquids. [OSWER PD 943.001A]

EPA intends the exception for aqueous liquids with less than 24% alcohol to apply to alcoholic beverages (the term "ethanol" should have been used rather than alcohol). [OSWER PD 9443.02(85)]. If a waste containing 0-24% alcohol has a flash point of less than 140°F it exhibits the characteristic of ignitability. [PD 9443.06(84) and PD 9443.07(85)].

Ignitable reactives: Wastes that exhibit this characteristic are primarily inorganic solids such as reactive alkali metals (sodium, potassium, etc.) and calcium carbide slags. These waste will react with water and generate gases that can ignite due to the heat of reaction. Finely divided solids such as aluminum and magnesium can also react vigorously when ignited. EPA distinguishes between this class of wastes and characteristic reactive wastes by the need for ignition: ignitable reactives are hazardous when ignited; reactive wastes are extremely reactive even in the absence of an ignition source.

Ignitable compressed gases: These include primarily compressed gas cylinders and aerosol cans that use flammable propellants (e.g., propane,

etc).

Oxidizers: Oxidizers are primarily inorganic peroxides, perchlorates, nitrates, and permanganates. The presence of any amount of these materials does not indicate that a material is an oxidizer, rather, one or more of these substances must be present in a quantity sufficient to yield oxygen and stimulate combustion.

Corrosivity (D002)

Testing for pH only provides meaningful results on aqueous waste streams. Waste streams that are not aqueous must be evaluated more carefully and may require evaluation by the second property. The pH of the free liquid portion of a waste, as determined by the paint filter liquids test (SW-846 Method 9095), should be evaluated for corrosivity. [OSWER PD 9443.03(83)] Common examples of aqueous corrosive wastes include; spent acids/bases, certain wastewaters, and spent strippers and cleaners.

Non-aqueous wastes must be evaluated by the corrosivity toward steel test (NACE Standard TM-01-69). Standard reference material should be consulted to evaluate whether materials may potentially exhibit this characteristic. Some common examples of nonaqueous liquid wastes that exhibit the characteristic of corrosivity are; metal cleaners and etchants, concentrated acids that have no water content, certain resins and catalysts, and other organic and inorganic chemicals.

Physically solid waste forms are not regulated as corrosive hazardous wastes. The corrosivity definitions only apply to liquids. [OSWER PD 9443.09(84)]

Reactivity (D003)

In the LDR third-third rule, EPA clarified the difference between an ignitable reactive (covered under OAC 3745-51-21) and a reactive waste (covered under OAC 3745-51-23) indicating that an ignitable reactive waste requires an ignition source.

For cyanide and sulfide bearing wastes, EPA has established test methods for quantifying constituent levels (SW-846 Methods 9010 and 9030, respectively). Wastes with levels of cyanides or sulfides below 10 ppm are not considered reactive for cyanides/sulfides, wastes with cyanides/sulfides above 200 ppm would be considered reactive (OSWER PD 9443.09(84)).

Standard references and the applicable DOT references are consulted in making determinations regarding reactivity.

Toxicity Characteristic (D004 - D043)

In general a combination of process knowledge and sampling and analysis are used to characterize wastes with respect to the Toxicity Characteristic (TC). EP Toxicity data are not valid as a means of determining whether wastes fail the TC for metals and herbicides/pesticides. However, EP Toxicity results may be used as knowledge of the waste to support a determination based on process knowledge. All process knowledge (i.e., EP Tox results <u>and</u> other process knowledge supporting a determination) must be documented in the waste determination file.

Totals data may be used to evaluate whether a waste would fail the TC. For liquid waste streams, the waste itself is the extract, and totals results should be compared directly to the regulatory level. For completely solid waste streams, if totals results are less than 20 times greater than the regulatory level, then the waste stream may be determined to be nonhazardous (this accounts for the 20-fold dilution in the extraction procedure). See Step 1.2 of the TCLP Method (SW-846 Method 1311).

Under the TCLP, wastes must either have a praticle size greater than 1 cm in its narrowest dimension (i.e., is capable of passing through a a 9.5 mm (0.375 inch) standard sieve) or have surface area per gram of material equal to or greater than 3.1 cm^2. Surface area criteria are meant for filamentous (e.g., paper, cloth and similar) waste materials. See Step 7.1.3 of the TCLP Method (SW-846 Method 1311).

Certain wastes (e.g., oily wastes) are extremely difficult to analyze using the TCLP and return highly variable results. Case-by-case decisions may

be made to use an alternative approach for determining whether these waste streams fail the TC. A conservative approach is to analyze the waste at the totals level to determine if there is any potential for it to fail the TC. If the totals results exceed the regulatory value then the waste must be evaluated under the TCLP test.

TC Metals: All waste streams must be evaluated to determine if they fail the TC for one or more of the eight metals listed under OAC 3745-51-24 Table 1. These TC metals may be evaluated based on process knowledge or sampling and analysis results. Process knowledge determinations for TC metals requires knowledge of the waste matrix and composition. TC metals of concern can be found in a number of materials used onsite. The following is a short list of sources and/or materials for specific metals:

Arsenic: CCA treated wood, rodenticides and insecticides may contain arsenic compounds.
Barium: Barium salts were used in a number of heat treating operations onsite.
Cadmium: Certain dust collector bags used cadmium springs to hold them in place. Certain batteris also have high levels of cadmium.
Chromium: Acidic materials stored in stainless steel tanks for extended periods of time may leach chromium to the material stored in the tanks.
Lead: Lead-acid batteries, lead-based paint, lead solder and flux, lead pipes and pipe dope are all sources of lead.
Mercury: Thermometers, barometers, vacuum pumps from gas chromatography (GC) instruments, older electrical switches, and certain batteries may contain or use mercury.
Selenium: Used in electronics industry; no direct uses onsite.
Silver: Used in photographic chemicals (e.g., developer solution).

For batteries that potentially fail the TC the following protocol may be used for testing:

- batteries that are not designed to prevent disintegration after disposal should be cut up into small pieces before being tested using the TCLP;

- batteries that are designed in such a manner to prevent disintegration after disposal may be tested (pending development of other tests) by

using a salt water bath solution. If, after submersion for one month in such a solution, no leakage occurs, the product can be considered to be corrosion resistant. [PD 9443.05(83)]

A methodolgy developed for evaluated materials painted with lead-based paint has been developed for evaluating these materials to determine if they potentially fail the TC (reference memo).

TC Volatile Organics

All wastes must be evaluated to determine if they contain leachable levels of any of the volatile organics listed in the second grouping on the worksheet. Certain of these constituents are also listed spent solvent constituents. If a waste is determined to be a listed spent solvent then the TC code does not need to be applied to the waste (e.g., spent perchloroethylene listed as F001 does not need to be identified as D039). Benzene may be present in non-weathered gasoline at above the regulatory level. Lower cut petroleum distillates (e.g., kerosene, diesel) are less likely to fail the TC for benzene. As a product of breakdown, 1,2-dichloroethane is often found in waste streams with listed spent halogenated solvents.

TC Semi-Volatile Organics

The third group of TC constituents is the semi-volatile organics (excluding pesticides/herbicides). Although these constituents are much less likely to be found in FEMP waste streams at above the regulatory level, all wastes must be explicitly evaluated to determine if they fail the TC for any of these constituents.

TC Pesticide/Herbicides

In general, adequate process knowledge exists to rule out the herbicides and pesticides (i.e., D012 - D017) for most process waste streams. Process knowledge to rule out pesticides/herbicides for waste streams generated outside production buildings requires a greater degree of process knowledge, including documentation of pesticide/herbicide usage on-site. Using records of pesticide/herbicide application rates onsite combined with corroborative sampling it has been demonstrated that no soils generated

from areas where herbicides/pesticides have been applied. The methodolgy for completing this evaluation is contained in (reference memo).

HAZARDOUS WASTE CHARACTERISTICS - WORKSHEET

MEF Number: _____ Rev No.: __

This worksheet documents evaluation of this material to determine if it exhibits any of the characteristics of hazardous waste under 40 CFR 261.21 - 23 /OAC 3745-51-21 - 23.

A. IGNITABILITY (D001)

Exhibits the Characteristic	Evaluation Criteria	Rationale
__ yes __ no	It is a liquid, with flash point less than 140 F - 261.21(a)(1)/OAC 3745-51-21(A)(1)	
__ yes __ no	It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard - 261.21(a)(2)/OAC 3745-51-21(A)(2)	
__ yes __ no	It is an ignitable compressed gas as defined in 49 CFR 173.300 - 261.21(a)(3)/OAC 3745-51-21(A)(3)	
__ yes __ no	It is an oxidizer as defined in 49 CFR 173.151 - 261.21(a)(4)/OAC 3745-51-21(A)(4)	

B. CORROSIVITY (D002)

Exhibits the Characteristic	Evaluation Criteria	Rationale
__ yes __ no	It is aqueous and has pH of less than or equal to 2 - 261.22(a)(1)/OAC 3745-51-22(A)(1)	
__ yes __ no	It is aqueous and has pH of greater than or equal to 12.5 - 261.22(a)(1)/OAC 3745-51-22(A)(1)	
__ yes __ no	It is a liquid and corrodes steel (SAE 1020) at a rate greater than 1/4 inch per year at a test temperature of 130 F as determined by the NACE test method - 261.22(a)(2)/OAC 3745-51-22(A)(2)	

C. REACTIVITY (D003)

Exhibits the Characteristic	Evaluation Criteria	Rationale
__ yes __ no	It is normally unstable and readily undergoes violent change without detonating - 261.23(a)(1)/OAC 3745-51-23(A)(1)	
__ yes __ no	It reacts violently with water - 261.23(a)(2)/OAC 3745-51-23(A)(2)	
__ yes __ no	It forms potentially explosive mixtures with water - 261.23(a)(3)/OAC 3745-51-23(A)(3)	
__ yes __ no	When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment - 261.23(a)(4)/OAC 3745-51-23(A)(4)	
__ yes __ no	It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment - 261.23(a)(5)/OAC 3745-51-23(A)(5)	
__ yes __ no	It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement - 261.23(a)(6)/OAC 3745-51-23(A)(6)	
__ yes __ no	It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure - 261.23(a)(7)/OAC 3745-51-23(A)(7)	
__ yes __ no	It is a forbidden explosive as defined in 49 CFR 171.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88 - 261.23(a)(8)/OAC 3745-51-23(A)(8)	

OTHER REGULATORY AUTHORITIES - WORKSHEET

This worksheet documents evaluation of this material to determine if it is regulated under TSCA, CAA Asbestos NESHAPs, and Ohio Infectious Waste Regulation:

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes)
3. EVALUATOR:	4. DATE:

B. TSCA REGULATED PCB WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	PCB fluids greater than 500 ppm.	
__ yes __ no	PCB fluids between 50 and 500 ppm.	
__ yes __ no	non-liquid contaminated soil, rags, or other debris with PCBs greater than 50 ppm.	
__ yes __ no	PCB transformer.	
__ yes __ no	"large" PCB capacitor.	
__ yes __ no	PCB hydraulic machine [illegible] drained of fluids or with PCBs greater than 1000 not drained and solvent flushed.	
__ yes __ no	PCB contaminated electrical equipment all fluids not drained or all capacitors not removed.	
__ yes __ no	Other PCB article all fluids not drained or PCBs greater than 500 ppm.	
__ yes __ no	PCB container not drained or drained but PCBs over 500 ppm.	

C. CAA ASBESTOS NESHAPS - REGULATED ASBESTOS CONTAINING MATERIAL (RACM)

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Friable asbestos material	
__ yes __ no	Category I nonfriable ACM that has become friable	
__ yes __ no	Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting, or abrading	
__ yes __ no	Category II nonfriable ACM that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material	

D. MEDICAL/INFECTIOUS WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Material is a cultures or stock of infectious agent or is an associated biological material,	
__ yes __ no	Material is laboratory waste that was, or is likely to have been, in contact with infectious agents that may present a substantial threat to public health if improperly managed,	
__ yes __ no	Material is a pathological waste that has been removed or obtained during surgery or autopsy or for diagnostic evaluation, including human and animal tissues, organs, and body parts, and body fluids and excreta that may be contaminated with infectious agents,	
__ yes __ no	Material is human or animal blood specimens or blood products that are being disposed.	

Distribution:

__ TSCA PCB Management Program (EC&QA/OU3/TSWP)

__ Asbestos Management Program (EC&QA/Sitewide Compliance)

__ Infectious Waste Management Program (EC&QA/TSWP)

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7.0 Radioactive Waste

DOE Order 5820.2A, titled Radioactive Waste Management, establishes the policies, guidelines, and minimum requirements by which DOE manages its radioactive and mixed waste and contaminated facilities. The provisions of this Order apply to all DOE elements and all contractors and subcontractors performing work that involves management of waste containing radioactivity and/or radioactively contaminated facilities for DOE under the Atomic Energy Act (AEA) of 1954.

7.1 Low Level Radioactive Waste (LLRW)

Low level waste (LLW) constitutes by far the largest category of radioactive waste regulated under DOE Order 5820.2A at the FEMP. LLW is defined in 5820.2A as waste that contains radioactivity and is not classified as high level waste, transuranic waste, or spent nuclear fuel or 11(e)(2) byproduct material. In addition, test specimens of fissionable material, irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW, provided the concentration of transuranic is less than 100 nCi/g.

The FEMP Performance Objective for Radioactive Waste Characterization specifies the methodology to be used for identifying radioactive waste. In general, wastes that originate from Controlled Areas at the FEMP are considered radioactive waste unless demonstrated otherwise through analysis or administrative controls. Figure Rad1 provides the decisionmaking criteria for determining whether a waste is radioactive or not.

The Nuclear Regulatory Commission (NRC) regulates radioactive waste for commercial facilities. Under NRC regulation, LLW are classified into four different classes (Class A, B, C, and greater-than-class-C) based on the concentration of specific radionuclides in the waste. NRC requirements for disposal of LLW are dependent on this waste classification which is provided in 10 CFR 61.55. The DOE Nevada Test Site (NTS) waste management areas do not accept any DOE comparable greater-than-class-C waste for disposal. The FEMP Does not have in its inventory any waste that would meet this classification.

7.2 Transuranic Waste (TRU)

DOE Order 5820.2A defines transuranic waste as any waste, without regard to source or form, that is contaminated with alpha-emitting transuranium radionuclides (i.e., atomic number greater than 92) with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay.

Materials Control & Accountability (MC&A) records indicate there are no materials at the FEMP with TRU concentrations above the 100 nCi/g level. The highest TRU concentrations found were associated with some materials that were determined through analysis to contain in one case up to 93,904 dpm/g (42 nCi/g). Although not a probable scenario at the FEMP, consideration must be given to any processing of waste materials that could potentially concentrate the TRU nuclides to levels that cause them to be regulated as TRU waste.

7.3 High Level Waste (HLW)

High level wastes are defined under DOE Order 5820.2A as the highly radioactive waste material that results from the reprocessing of spent nuclear fuel, inlcuding liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation. The FEMP does not have any material that are defined as high level wastes.

7.4 Naturally Occurring and Accelerator-Produced Radioactive Material

DOE Order 5820.2A defines NOARM material as any radioactive material that can be considered naturally occurring and is not source, special nuclear, or byproduct material or that is produced in a charged particle accelerator. The FEMP does not have any material that was generated from a charged particle accelerator. DOE Order 5820.2A specifies NOARM material be managed in accordance with the 40 CFR 192 residual radioactive material guidelines, but that small amounts of NOARM may be managed as LLW.

7.5 AEA Section 11(e) Byproduct Material

DOE Order 5820.2A defines byproduct material as:

a. Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the radiation incident to the process of producing or utilizing special nuclear material. For purposes of determining the applicability of the Resource Conservation and Recovery Act to any radioactive waste, the term "any radioactive materia" refers only to the actual radionuclides dispersed or suspended in the waste substance. The nonradioactive hazardous waste component of the waste substance will be subject to regulation under the Resource Conservation and Recovery Act. (AEA Section 11(e)(1)).

b. The tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute "byproduct material." (AEA Section 11(e)(2)).

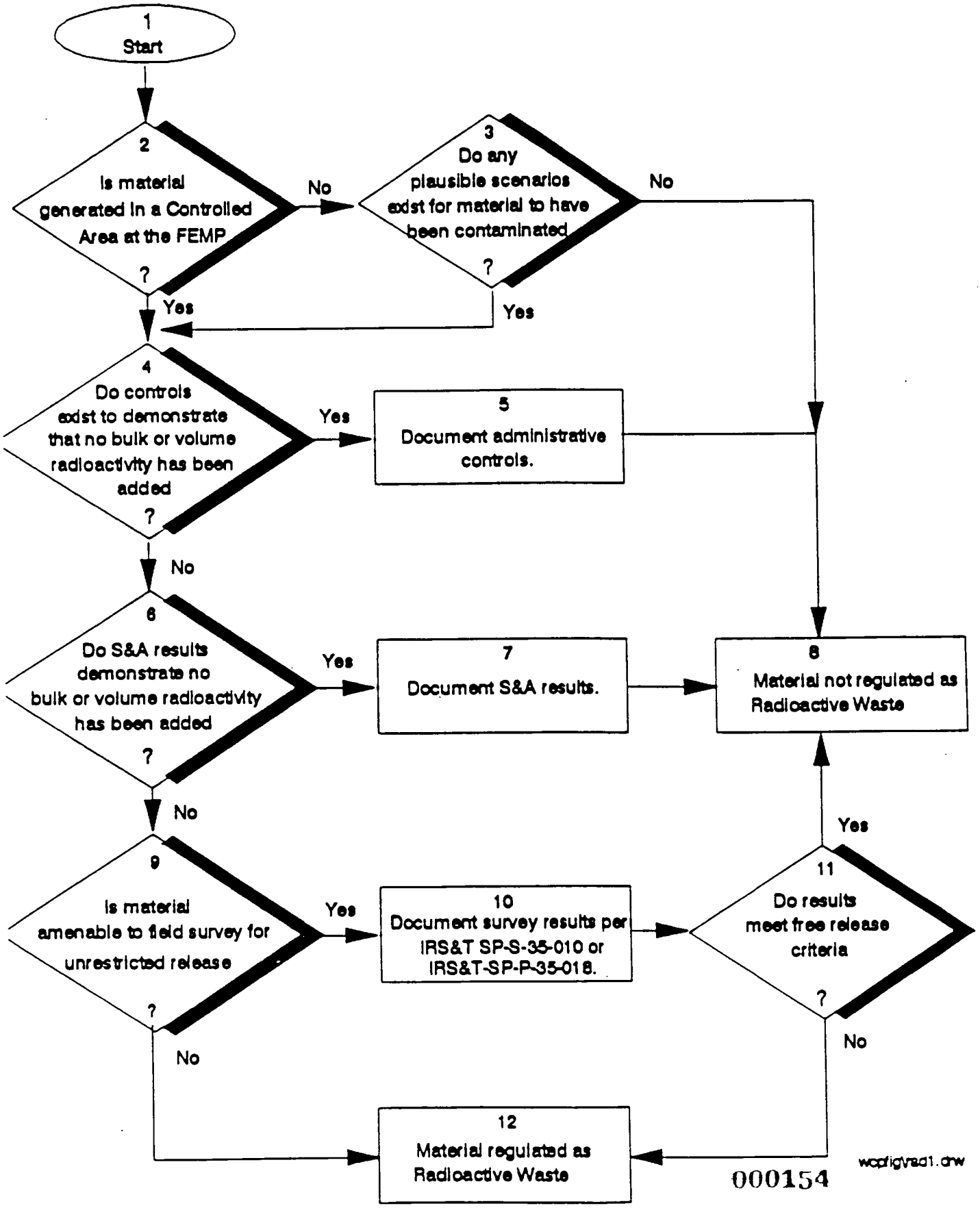
The waste in the K-65 silos (silos 1 and 2) and the drummed thorium waste stream referred to as "brazilian sludge" are examples of AEA Section 11(e)(2) byproduct material. Determinations that a material is an AEA 11(e)(2) byproduct material must be reviewed by Environmental Compliance.

DOE Order 5820.2A specifies that 11(e)(2) byproduct material be managed in accordance with the 40 CFR 192 residual radioactive material guidelines, but that small amounts of NOARM may be managed as LLW.

7.6 Non-Radioactive Waste

[This section in process.]

Figure 7.6
Radioactive Waste Characterization



7.7 Mixed Waste

Mixed waste is defined by DOE Order 5820.2A as waste containing both radioactive and hazardous components as defined by the AEA and RCRA, respectively. The FEMP has a discrete inventory of mixed waste in storage onsite and is currently assessing options for waste inventory reduction options.

7.8 Completing Radioactive Waste Worksheets

[This section in process.]

RADIOACTIVE WASTE IDENTIFICATION/CLASSIFICATION - WORKSHEET

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.: _____	2. Date Completed:	3. Provide 15 digit Lot Marking if available or Material Type and Source Code:
4. Evaluator:	5. Badge No./Co.Name:	6. Phone No.:

Sections B and C provide documentation of the basis for identifying materials at the FEMP that may be managed as non-radioactive wastes (i.e. no no measurable in in radioactivity above background in volume or bulk resulting from DOE operations and Contains no surface radioactivity above limits established in DOE Order 5 These blocks are generation point specific (i.e. within a Radioactive Materials Management Area (RMMA) or outside of an RMMA). If one or more of the follo applicable criteria are not met, then the waste must be managed as a radioactive waste.

B. NON-RMMA MATERIAL

Meets the criteria	Evaluation Criteria
__ yes __ no __ N/A	Material is stored, used, and generated outside of a Radioactive Materials Management Area (RMMA) and process knowledg indicates no reason to expect the material to have any added bulk or volume radioactivity as a result of DOE operations and material meets the surface contamination criteria of DOE Order 5400.5 [Documentation Attached]. [Documentation Attached]
__ yes __ no __ N/A	Material is stored, used, and generated outside of a RMMA and radiological survey and/or sampling and analysis (circle appropriate method) has been performed to demonstrate that the material has no added bulk or volume radioactivity as a res of DOE operations and meets the surface contamination criteria of DOE Order 5400.5 [Documentation Attached]

C. RMMA MATERIAL

Meets the criteria	Evaluation Criteria
__ yes __ no __ N/A	Material is generated in an RMMA; however, the material is in a sealed container which has never been opened or exposed t source of activation and the container meets the surface release criteria of DOE 5400.5 [Documentation Attached] __ Documentation of Process Knowledge __ Radiological Survey
__ yes __ no __ N/A	Potential exists for contamination to have occurred however, radiological survey and/or sampling and analysis (circle appropna method) has been completed to demonstrate that the material has no added radioactivity in bulk or volume as a result of DOE operations and the container meets the surface release criteria of DOE 5400.5 [Documentation Attached]. __ Documentation of Process Knowledge __ Radiological Survey

D. RADIOLOGICAL INFOMATION

Radionuclide(s)	Concentration (Specify Units)	Determination basis
_____		
_____		

E. RADIOACTIVE WASTE CLASSIFICATION

Meets the criteria	Evaluation Criteria	Rationale
__ yes __ no	Nonradioactive Waste [Material must be certified by Radiological Assessment prior to leaving the FEMP site. If this material is also a RCRA hazardous or TSCA waste then DOE approval is required to prior to shipment of wastes to TSD Facilities]	
__ yes __ no	Low Level Radioactive Waste (LLRW) [See form MEFNTS to determine NTS acceptability. If this material is also a RCRA hazardous or TSCA waste then DOE approval is required to prior to shipment of wastes to TSD Facilities]	
__ yes __ no	Transuranic Waste (TRU). TRU concentration > 100 nCi/g.	

Note: Nonradioactive waste classification requires concurrence on the MEF Evaluation Section by Radiological Assessment.

F. DISTRIBUTION DISTRIBUTION

Generator _____ MS# ____

Radiological Assessment Grady Calhoun MS# ____

HAZARDOUS WASTE CHARACTERISTICS - WORKSHEET

MEF Number: _____ Rev No.: ____

his worksheet documents evaluation of this material to determine if it exhibits any of the characteristics of hazardous waste under 40 CFR 261.24 , OAC 3745-51-24.

6054

A. TOXICITY CHARACTERISTICS

Exhibits the Characteristic	HW Code	Constituent	Regulatory Level (mg/L)	TCLP Concentration (mg/L) (if in excess of Reg Level)	Rationale
___ yes ___ no	D004	arsenic	5.0		
___ yes ___ no	D005	barium	100.0		
___ yes ___ no	D006	cadmium	1.0		
___ yes ___ no	D007	chromium	5.0		
___ yes ___ no	D008	lead	5.0		
___ yes ___ no	D009	mercury	0.2		
___ yes ___ no	D010	selenium	1.0		
___ yes ___ no	D011	silver	5.0		
___ yes ___ no	D018	benzene	0.5		
___ yes ___ no	D019	carbon tetrachloride	0.5		
___ yes ___ no	D021	chlorobenzene	100.0		
___ yes ___ no	D022	chloroform	6.0		
___ yes ___ no	D028	1,2-dichloroethane	0.5		
___ yes ___ no	D029	1,1-dichloroethylene	0.7		
___ yes ___ no	D035	methyl ethyl ketone	200.0		
___ yes ___ no	D039	tetrachloroethylene	0.7		
___ yes ___ no	D040	trichloroethylene	0.5		
___ yes ___ no	D043	vinyl chloride	0.2		
___ yes ___ no	D023	o-cresol	200.0		
___ yes ___ no	D024	m-cresol	200.0		
___ yes ___ no	D025	p-cresol	200.0		
___ yes ___ no	D026	cresol	200.0		
___ yes ___ no	D027	dichlorobenzene	7.5		
___ yes ___ no	D030	2,4-dinitrotoluene	0.13		
___ yes ___ no	D032	hexachlorobenzene	0.13		
___ yes ___ no	D033	hexachlorobutadiene	0.5		
___ yes ___ no	D034	hexachloroethane	3.0		
___ yes ___ no	D036	nitrobenzene	2.0		
___ yes ___ no	D037	pentachlorophenol	100.0		
___ yes ___ no	D038	pyridine	5.0		
___ yes ___ no	D041	2,4,5-trichlorophenol	400.0		
___ yes ___ no	D042	2,4,6-trichlorophenol	2.0		
___ yes ___ no	D012	Endrin	0.02		
___ yes ___ no	D013	Lindane	0.4		
___ yes ___ no	D014	Methoxychlor	10.0		
___ yes ___ no	D015	Toxaphene	0.5		
___ yes ___ no	D016	2,4-D	10.0		
___ yes ___ no	D017	2,4,5-TP Silvex	1.0		
___ yes ___ no	D020	Chlordane	0.03		
___ yes ___ no	D031	Heptachlor	0.008		

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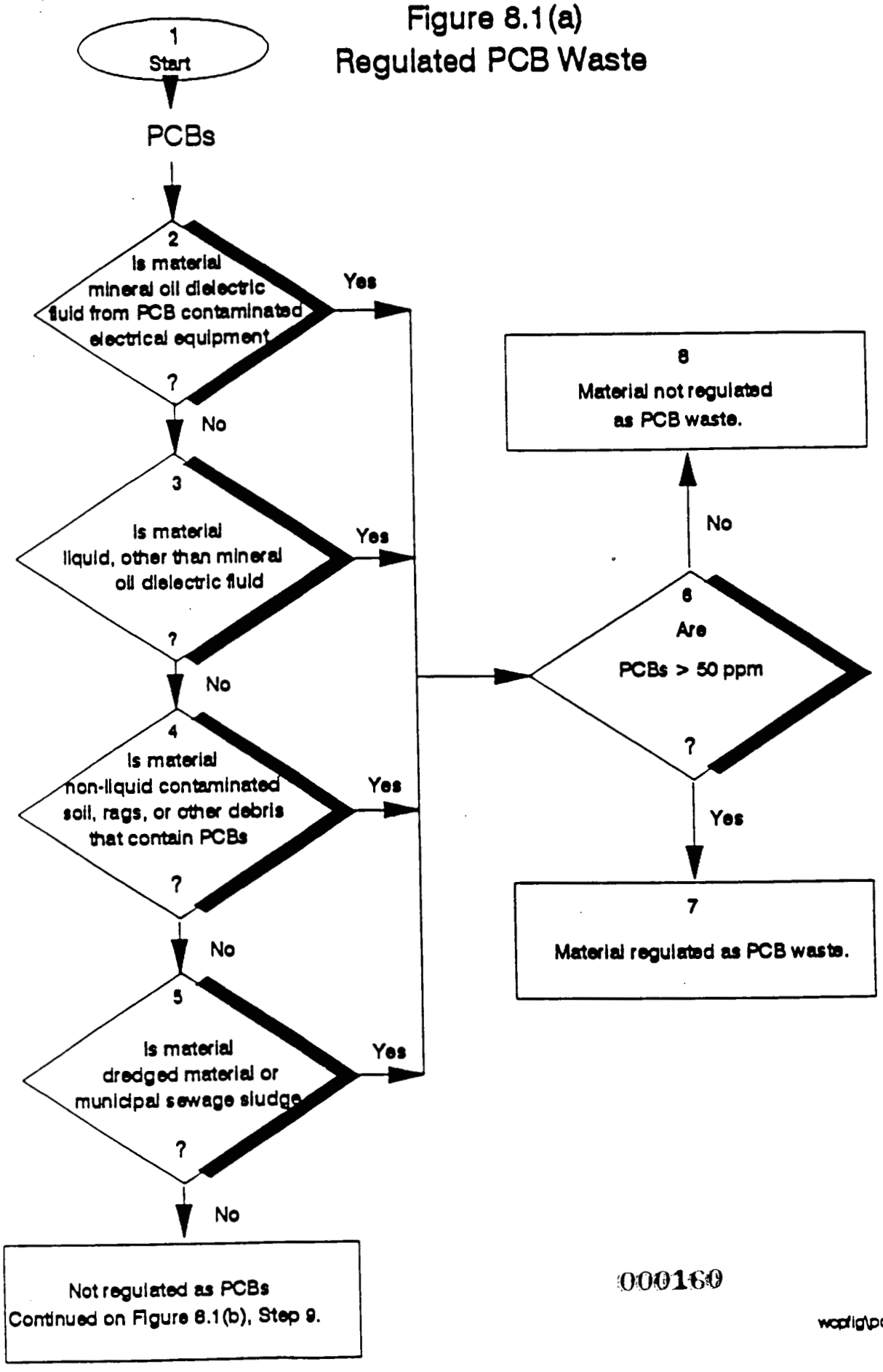
8.0 Polychlorinated Biphenyls (PCBs)

Certain wastes that contain or have been incontact with polychlorinated biphenyls (PCBs) are regulated under the Toxic Substances Control Act (TSCA) as PCB wastes. The federal regulations that identify the materials that are regulated and have specified management and treatment/disposal requirements are codified at 40 CFR 761. The following section provides the guidance and implementing procedures for identifying PCB waste at the FEMP.

Figure 8.1(a)
Regulated PCB Waste



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8.1 Regulated PCB Waste (cont.)

PCB ARTICLES

PCB articles are defined as any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. PCB articles include capacitors, transformers, electric motors, pumps, pipes, and any other manufactured item (1) which is formed to a specific shape or design during manufacture, (2) which has end use function(s) dependent in whole or in part upon its shape or design during end use, and (3) which has either no change in chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of a PCB article.

Step 9 PCB transformers are defined as any transformer that contains 500 ppm PCBs or greater. [40 CFR 761.3].

Step 10 PCB transformers are regulated as PCB waste. [40 CFR 761.60(b)(1)].

Step 11 Capacitors are defined as devices for accumulating and holding a charge of electricity and consisting of surfaces separated by a dielectric. [40 CFR 761.3].

Step 12 Capacitors that contain less than 3 pounds of dielectric fluid are defined as "small capacitors" and are not regulated as PCB waste *unless* they are owned by a person who manufactures or at one time manufactured PCB capacitors or PCB equipment and acquired the capacitors in the course of such manufacturing.

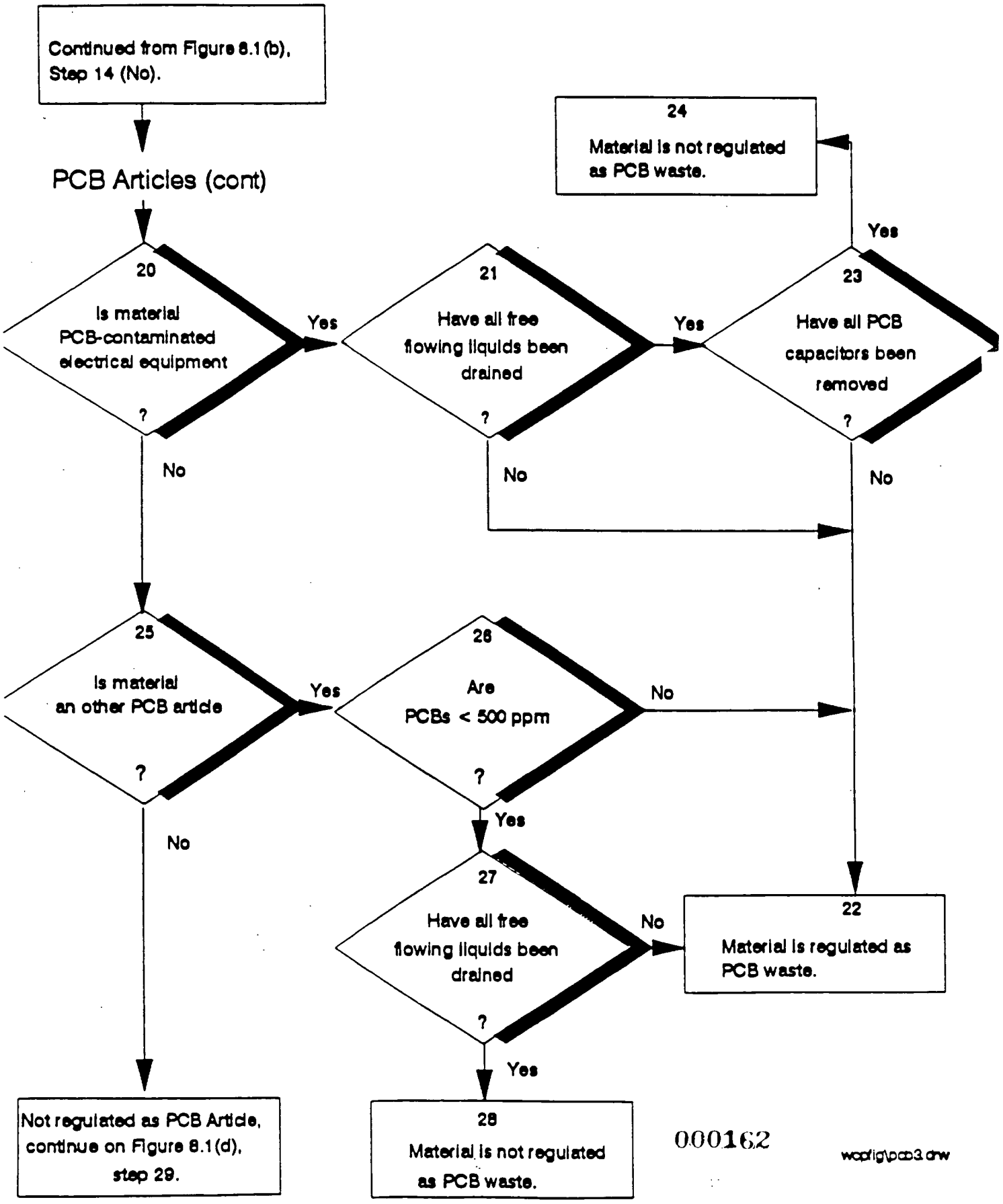
A capacitor whose total volume is less than 100 cubic inches may be considered to contain less than 3 pounds of dielectric fluid. Capacitors with total volume of greater than 200 cubic inches must be considered to contain greater than 3 pounds of dielectric fluid and are defined as "large capacitors". Capacitors whose total volume is between 100 and 200 cubic inches may be assumed to contain less than 3 pounds of dielectric fluid if the capacitor weighs less than 9 pounds. [40 CFR 761.3 and 761.60(b)(2)].

Step 13 Large capacitors are regulated as PCB waste. [40 CFR 761.60(b)(2)].

Steps 14 - 19 Hydraulic machines such as die casting machines that contain 50 ppm or greater PCBs are defined as PCB articles.

PCB hydraulic machines are not regulated as PCB waste if they contained PCBs less than 1000 ppm and all free flowing liquid has been drained and disposed in accordance with 40 CFR 761.60(a). PCB hydraulic machines that contained 1000 ppm or greater PCBs must be flushed prior to disposal with a solvent containing less than 50 ppm PCBs.- Appropriate solvents are listed under 40 CFR 761.60(b)(1)(i)(B). [40 CFR 761.60(b)(4)].

Figure 8.1 (c)



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wcpfig\pcb3.drw

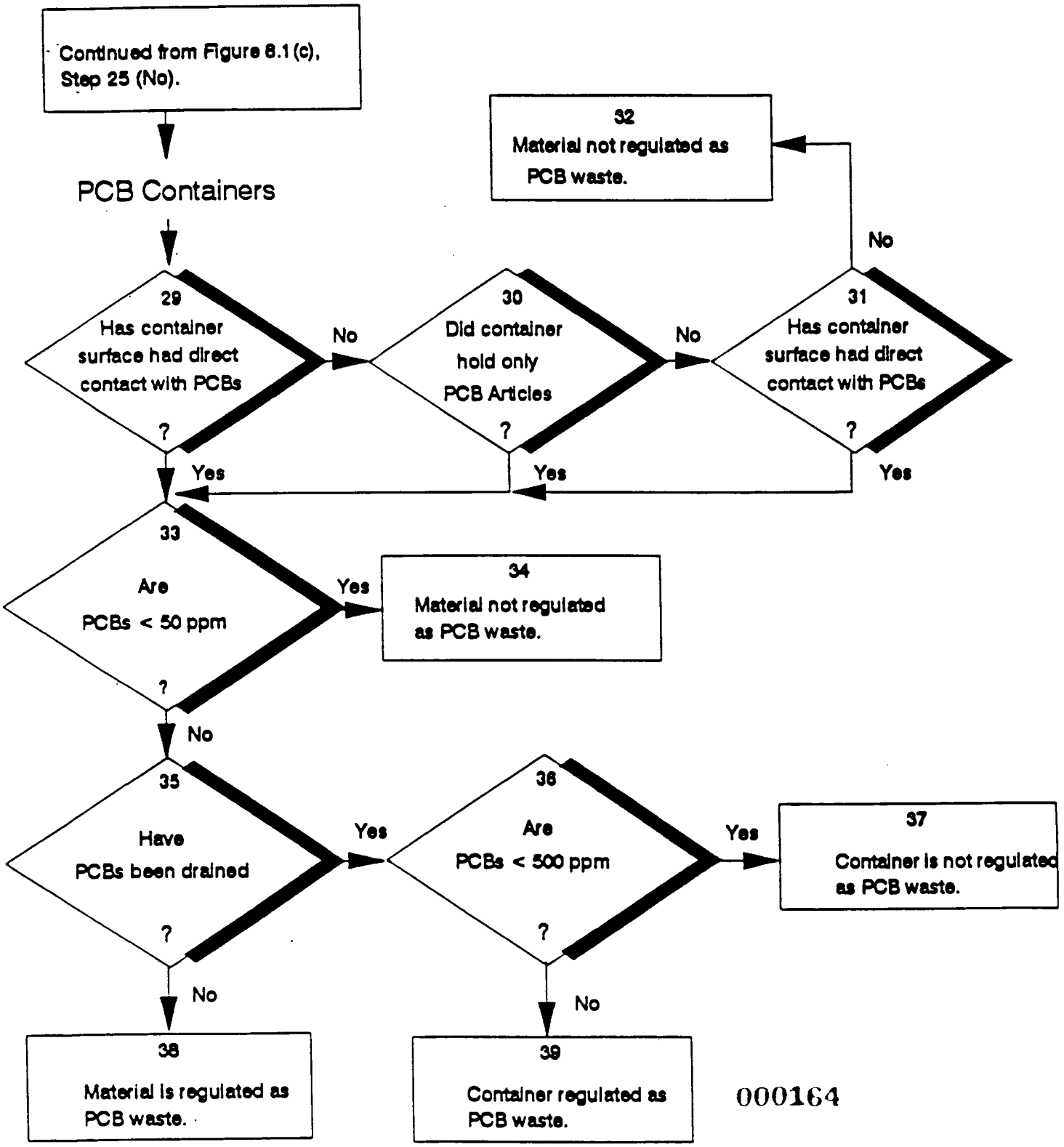
8.1 Regulated PCB Waste (cont.)

Step 20 PCB-contaminated electrical equipment is any electrical equipment, including but not limited to, transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contain 50 ppm or greater PCBs, but less than 500 ppm PCBs. Oil-filled electrical equipment other than circuit breakers, reclosers, and cable whose PCB concentration is unknown must be assumed to be PCB-contaminated electrical equipment.

Steps 21 - 24 If all free flowing liquid is drained and capacitors removed then PCB-contaminated electrical equipment is not regulated as PCB waste. If these two conditions are not met, then the equipment is regulated as PCB waste. Disposal of PCB capacitors must comply with the requirements of 761.60(b)(2). [40 CFR 761.60(b)(4)].

Steps 25 - 28 *Other PCB articles* with 500 ppm PCBs or greater are regulated as PCB waste. *Other PCB articles* with PCB concentration between 50 and 500 ppm are not regulated as PCB waste provided all free flowing liquids have been drained and disposed in accordance with 761.60(a).

Figure 8.1 (d)



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8.1 Regulated PCB Waste (cont.)

PCB CONTAINERS

PCB containers are defined as any package, can, bottle, bag, barrel,drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) has been in direct contact with PCBs.

Steps
29 - 32 PCB article containers whose surface(s) have not had direct contact with PCBs are not regulated as PCB waste. [761.3].

Steps
33 - 34 PCB containers that contained PCBs less than 50 ppm are not regulated as PCB waste.

Steps
35 - 37 PCB containers that held PCBs with concentration between 50 and 500 ppm are not regulated as PCB waste provided all PCBs have been drained. [761.60(c)(2)].

Step 38 PCB containers that held PCBs with concentration between 50 and 500 ppm are regulated as PCB waste if all PCBs have not been drained. [761.60(c)(2)].

Step 39 Unless decontaminated in accordance with 40 CFR 761.79, PCB containers that held PCBs with concentration greater than 500 ppm are regulated as PCB waste regardless of whether all PCBs have been drained. [761.60(c)(1)].

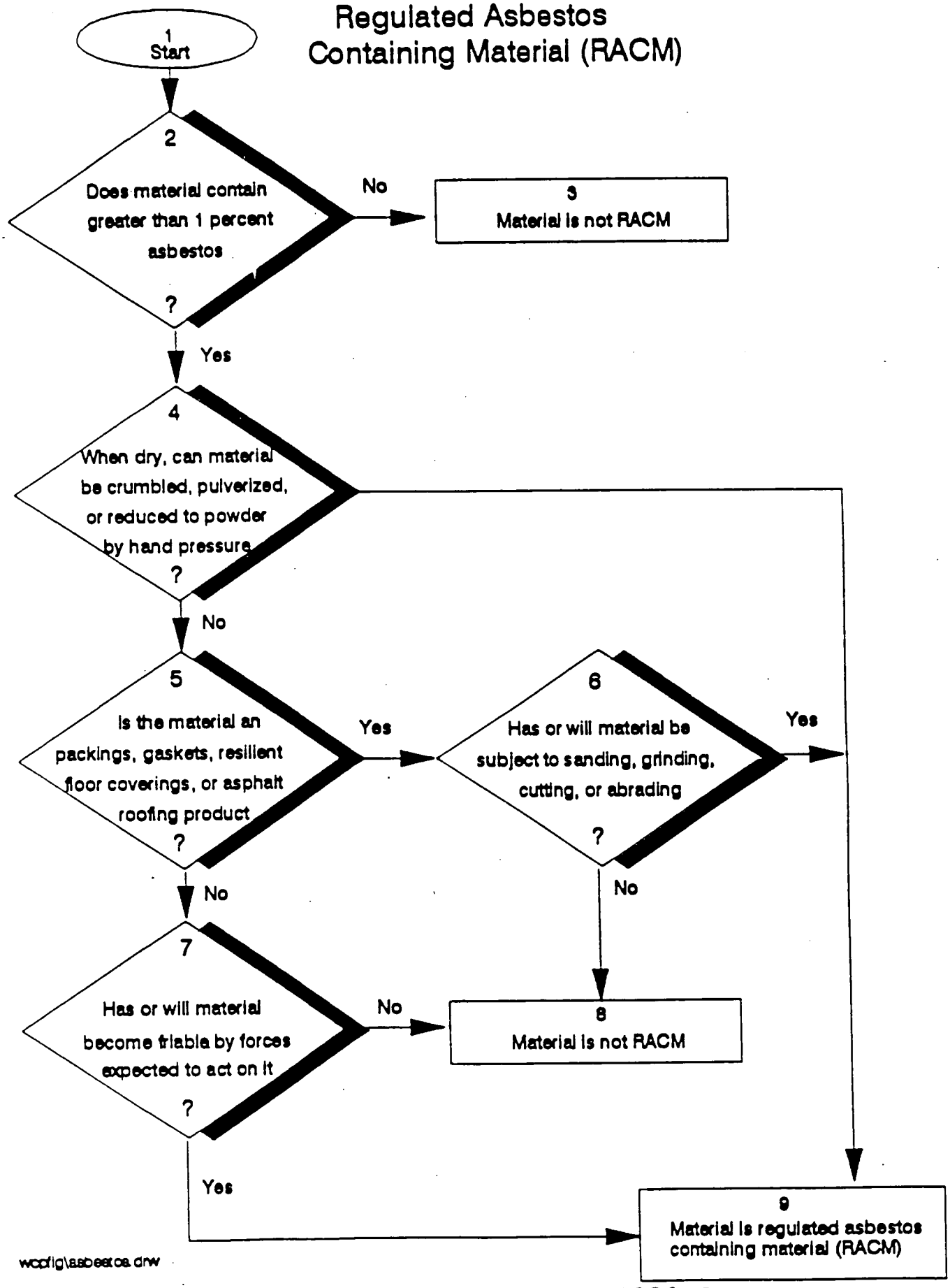
8.2 Completing PCB Waste Worksheets

[This section in process.]

9.0 Asbestos Containing Material

Certain asbestos containing materials (ACM) are regulated under the Clean Air Act (CAA) National Emission Standards for Hazardous Air Pollutants (NESHAPs) at 40 CFR Part 61. In accordance with these regulations, regulated ACM must be managed and disposed of in prescribed manners. The following section presents the criteria for identifying wastes that are regulated as regulated ACM (RACM) at the FEMP. Proper identification of these wastes allows for appropriate management of the waste disposition of these materials from the FEMP as the facility procedes through its safe shutdown and environmental restoration initiatives.

Figure 9.1
Regulated Asbestos Containing Material (RACM)



wcpfig\asbestos.drw

9.1 Regulated Asbestos Containing Material (RACM)

Step 1 Regulated asbestos containing materials (RACM) must be disposed of in accordance with the CAA Asbestos NESHAPs codified in 40 CFR Part 61.

Step 2 Polarized Light Microscopy (PLM) is the specified method used for determining if materials contain greater than one percent asbestos. This method is provided in Appendix F of 40 CFR Part 763, Section 1.

Step 3 Materials that contain less than one percent asbestos are not regulated as asbestos containing material (ACM) regardless of their other characteristics.

Step 4 Friable asbestos material is identified as any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

Step 5 Category I non-friable ACM is defined as asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than one percent asbestos that when dry, can not be crumbled, pulverized, or reduced to powder by hand.

Step 6 If category I non-friable ACM has or will be subject to sanding, cutting, grinding, or abrading then the material is regulated ACM.

Step 7 Category II non-friable asbestos is defined as any material, excluding Category I ACM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Step 8 If category II ACM has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on it in the course of demolition or renovation operations regulated by 40 CFR Subpart M.

9.2 Completing RACM Worksheets

[This section in process.]

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OTHER REGULATORY AUTHORITIES - WORKSHEET

This worksheet documents evaluation of this material to determine if it is regulated under TSCA, CAA Asbestos NESHAPs, and Ohio Infectious Waste Regulation

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes) 6054
3. EVALUATOR:	4. DATE:

B. TSCA REGULATED PCB WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	PCB fluids greater than 500 ppm.	
__ yes __ no	PCB fluids between 50 and 500 ppm.	
__ yes __ no	non-liquid contaminated soil, rags, or other debris with PCBs greater than 50 ppm.	
__ yes __ no	PCB transformer.	
__ yes __ no	"large" PCB capacitor.	
__ yes __ no	PCB hydraulic machine not drained of fluids or with PCBs greater than 1000 not drained and solvent flushed.	
__ yes __ no	PCB contaminated electrical equipment all fluids not drained or all capacitors not removed.	
__ yes __ no	Other PCB article all fluids not drained or PCBs greater than 500 ppm.	
__ yes __ no	PCB container not drained or drained but PCBs over 500 ppm.	

C. CAA ASBESTOS NESHAPS - REGULATED ASBESTOS CONTAINING MATERIAL (RACM)

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Friable asbestos material	
__ yes __ no	Category I nonfriable ACM that has become friable	
__ yes __ no	Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting, or abrading	
__ yes __ no	Category II nonfriable ACM that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material	

D. MEDICAL/INFECTIOUS WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Material is a cultures or stock of infectious agent or is an associated biological material,	
__ yes __ no	Material is laboratory waste that was, or is likely to have been, in contact with infectious agents that may present a substantial threat to public health if improperly managed,	
__ yes __ no	Material is a pathological waste that has been removed or obtained during surgery or autopsy or for diagnostic evaluation, including human and animal tissues, organs, and body parts, and body fluids and excreta that may be contaminated with infectious agents,	
__ yes __ no	Material is human or animal blood specimens or blood products that are being disposed.	

Distribution:

__ TSCA PCB Management Program (EC&QA/OU3/TSWP)

__ Asbestos Management Program (EC&QA/Sitewide Compliance)

__ Infectious Waste Management Program (EC&QA/TSWP)

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10.0 Infectious Waste

The State of Ohio has promulgated rules which regulate the management, treatment and disposal of infectious waste. The Ohio infectious waste rules, codified in the Ohio Administrative Code (OAC) at 3745-27-01 through 37, establish standards which generators, transporters, and treatment facilities must comply with in managing infectious waste in the State of Ohio. The definition of infectious waste is found in OAC 3745-27-01(V). The following section presents general guidance for identifying infectious waste pursuant to the Ohio regulations and provides implementing guidance for documenting the status of materials at the FEMP with respect to these regulations.

10.1 Completing Infectious Waste Worksheets

[This section in process.]

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OTHER REGULATORY AUTHORITIES - WORKSHEET

6054

This worksheet documents evaluation of this material to determine if it is regulated under TSCA, CAA Asbestos NESHAPs, and Ohio Infectious Waste Regulatior

A. WASTE STREAM IDENTIFICATION

1. MEF #: Revision No.:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes)
3. EVALUATOR:	4. DATE:

B. TSCA REGULATED PCB WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	PCB fluids greater than 500 ppm.	
__ yes __ no	PCB fluids between 50 and 500 ppm.	
__ yes __ no	non-liquid contaminated soil, rags, or other debris with PCBs greater than 50 ppm.	
__ yes __ no	PCB transformer.	
__ yes __ no	"large" PCB capacitor.	
__ yes __ no	PCB hydraulic machine not drained of fluids or with PCBs greater than 1000 not drained and solvent flushed.	
__ yes __ no	PCB contaminated electrical equipment all fluids not drained or all capacitors not removed.	
__ yes __ no	Other PCB article all fluids not drained or PCBs greater than 500 ppm.	
__ yes __ no	PCB container not drained or drained but PCBs over 500 ppm.	

C. CAA ASBESTOS NESHAPS - REGULATED ASBESTOS CONTAINING MATERIAL (RACM)

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Friable asbestos material	
__ yes __ no	Category I nonfriable ACM that has become friable	
__ yes __ no	Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting, or abrading	
__ yes __ no	Category II nonfriable ACM that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material	

D. MEDICAL/INFECTIOUS WASTE

Regulated Material?	Evaluation Criteria	Rationale
__ yes __ no	Material is a cultures or stock of infectious agent or is an associated biological material,	
__ yes __ no	Material is laboratory waste that was, or is likely to have been, in contact with infectious agents that may present a substantial threat to public health if improperly managed,	
__ yes __ no	Material is a pathological waste that has been removed or obtained during surgery or autopsy or for diagnostic evaluation, including human and animal tissues, organs, and body parts, and body fluids and excreta that may be contaminated with infectious agents,	
__ yes __ no	Material is human or animal blood specimens or blood products that are being disposed.	

Distribution:

___ TSCA PCB Management Program (EC&QA/OU3/TSWP)

___ Asbestos Management Program (EC&QA/Sitewide Compliance)

___ Infectious Waste Management Program (EC&QA/TSWP)

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11.0 Waste Minimization Programs

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12.0 Onsite Waste Management Programs

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13.0 Offsite Waste Management Programs

Offsite waste management programs include facilities that are recycling, treating or disposing of FEMP waste. These facilities generally have a set of Waste Acceptance Criteria (WAC) with which FEMP materials must comply. The FEMP waste characterization program plays a key role in documenting conformance with WAC that relate to the regulatory status of a waste or to specific physical, chemical, or radiological characteristics.

13.1 LLRW Shipping to NTS

The FEMP utilizes the Nevada Test Site (NTS) for disposal of low level waste. The requirements, terms, and conditions under which NTS will accept low level waste for disposal are provided in the Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325, Revision 1. The FEMP stipulated to the NVO-325 requirements in its approved Application to Ship Waste to the Nevada Test Site. A major element of the FEMP program presented in the application is certifying conformance to the NVO-325 Waste Acceptance Criteria (WAC) that pertain to waste form. FME is charged with the primary responsibility for documenting the objective information with which a Waste Certification Official (WCO) can verify that waste meet the NVO-325 WAC and certify the waste for shipment.

Guidance for evaluating materials with respect to each criterion is provided below. FME completes the NVO-325 WAC Review Form to document whether the waste stream meets all of the NVO-325 WAC. An example of this form is provided in Figure NTS. If all items are marked "yes" then the waste is acceptable for shipment to the NTS.

13.1.1 General Waste Form Criteria

NVO-325 WAC which require determinations of the regulatory status of a waste are addressed under the core waste characterization program. Other NVO-325 WAC require additional determinations regarding physical/chemical characteristics of the waste. The decisionmaking criteria for evaluating these additional items are provided below. FME documents whether materials evaluated conform to each specific waste form WAC or not on the NVO-325 WAC Review Form. When a material does not meet a specific WAC it is not acceptable for shipment to NTS unless corrective actions are taken.

Low-Level Radioactive Waste (LLRW): The material shall be defined as LLW per DOE Order 5820.2A guidelines. (NVO-325 5.5.1.1).

Evaluation Criteria: Addressed under Radioactive Waste - Section 7.1.

Transuranics: LLW must have a transuranic nuclide (TRU) concentration less than 100 nCi/g. The mass of the waste container, including shielding, shall not be used in calculating the specific activity of the waste. (NVO-325 5.5.1.1(A)).

Evaluation Criteria: Addressed under Radioactive Waste - Section 7.2.

Hazardous Waste: LLW offered for disposal at NTS waste sites shall not exhibit any characteristics of, or be listed as, hazardous waste as identified in Title 40 CFR 261, "Identification and Listing of Hazardous Waste" or state of generation hazardous waste regulations. (NVO-325 5.5.1.1(B)).

Evaluation Criteria: Addressed under Hazardous Waste - Section 6.0.

Free Liquids: Free liquids means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure conditions. LLW disposed at NTS waste management sites shall contain as little free liquids as is reasonably achievable, but in no case shall the liquid equal or exceed 0.5 percent by volume of the external waste container.

Evaluation Criteria: This WAC may be evaluated based on process knowledge or waste testing to determine whether the waste stream fails this criteria. Determinations based on process knowledge may be substantiated by a visual inspection of the container population. Working fluids from equipment will be determined to contain no free liquids when the chamber containing the liquid has been drained completely and no dripping is observed. Chambers will be plugged or sealed and the equipment tagged as being drained after this demonstration is made. Free liquids determinations are generally completed as part of the RCRA waste characterization process. The PFLT test is performed to determine the presence of free liquids when process knowledge does not yield sufficient information to complete this determination. If the waste is identified as containing free liquids then LLWM Programs will be responsible for

ensuring that operations personnel perform required actions to eliminate free liquids (e.g., by decanting and/or adding absorbent materials) before the waste is determined to be acceptable.

Particulates: Fine particulate wastes shall be immobilized so that the waste package contains no more than 1 weight percent of less-than-ten-micrometer-diameter particles, or 15 weight percent of less-than-200-micrometer-diameter particles or be in a form that could reasonably be transformed to a particulate during handling and interim storage. (NVO-325 5.5.1.1(D)).

Evaluation Criteria: Certain waste streams on-site will categorically fail the particulates WAC and while others may require testing to complete a rigorous evaluation. In addition, depending on the moisture content, many of the soils on-site will fail these limits. If testing is required because the waste form does not clearly meet the WAC, the waste stream shall be identified as requiring testing. Testing may be conducted using a particle size impactor or some other form of particle sizing equipment. If the waste stream fails to meet this criteria LLWM Programs will be responsible for ensuring the waste is either immobilized or shipped in an acceptable waste package.

Gases: Radioactive gases shall be stabilized or absorbed so that pressure in the waste package does not exceed 1.5 atm at 20 C. Compressed gases as defined by Title 49 CFR 173.300, including unpunctured aerosol cans, will not be accepted for disposal. Aerosol cans shall have puncture disfigurements readily recognizable by Real-Time-Radiography (RTR). Expended gas cylinders shall have the valve mechanism removed. (NVO-325 5.5.1.1(E)).

Evaluation Criteria: All waste streams are evaluated to determine if they contain any items that potentially fail this WAC. Compressed gas cylinders shall have their valves removed to demonstrate that they are at atmospheric pressure. Aerosol cans shall be punctured and void of all free liquids to demonstrate that they meet the WAC.

Stabilization: Where practical, waste shall be treated to reduce volume and provide a more structurally and chemically stable waste form. (NVO-325 5.5.1.1(F)).

Evaluation Criteria: FME will identify all LLW streams that have potential to generate harmful gases, vapors, or liquids. In addition, FME will identify waste streams that are candidates for treatment to reduce volume or provide a structurally more stable waste form.

Etiologic Agents: LLW containing pathogens, infectious wastes, or other etiologic agents as defined in Title 49 CFR 173.386 will not be accepted for disposal at NTS. (NVO-325 5.5.1.1(G)).

Evaluation Criteria: The only significant source of potential etiologic agents on-site is from medical services. Such materials may include band aids, tongue blades, syringes, cotton balls or other materials stained with blood or other body fluids, and outdated pharmaceuticals. These materials are managed according to Ohio infectious waste law/regulation (ORC 3734. and OAC 3745-27-01 to 25) which requires segregated packaging at the point of generation. Materials are placed in a red bag in a box premarked with the international biohazard label. These boxes are then transported by a registered transporter to a licensed treatment facility.

Chelating Agents: LLW containing chelating or complexing agents at concentrations greater than one percent by weight will not be accepted. (NVO-325 5.5.1.1(H)).

Evaluation Criteria: Chelating agents form coordination compounds by offering two or more chemical bonds (through ligands) to a central metal ion. The most common chelating agent is EDTA (ethylenediaminetetraacetic acid). Other common chelating agents are also aminopolyacetic acids. Excess chemicals from the onsite lab are the primary potential source of materials that may be identified as true chelating agents. FME has generated a list of potential chelating or complexing agents through an on-line database search and will consult this list to evaluate potential chelating or complexing agents.

Polychlorinated Biphenyls (PCBs): PCB-contaminated LLW will not be accepted for disposal at NTS unless the PCB concentration meets the municipal solid waste disposal labels. See Title 40 CFR 761.60 for PCB disposal requirements. (NVO-325 5.5.1.1(I)).

Evaluation Criteria: Addressed in Section 8.0.

Explosives and Pyrophorics: LLW shall not contain potentially explosive or pyrophoric material in a form that may spontaneously combust if the container is breached. (NVO-325 5.5.1.1(J)).

Evaluation Criteria: This WAC is generally addressed under the hazardous waste evaluation, however certain cases may exist where a material is excluded from the definition of solid waste under the AEA exclusions, but is still a potentially pyrophoric waste (e.g., uranium chips and turnings). Any waste streams that potentially fail this WAC shall be identified by FME.

13.1.2 Confirmatory Sampling

Under the core program, waste streams may be characterized by process knowledge when sufficient information exists to support the determination. Under NVO-325, sampling and analysis is required to support characterization unless one or more of the following conditions are met:

- Waste stream is difficult to sample because of physical form,
- Sampling and analysis of waste stream would result in unacceptable risks of radiation exposure (i.e., violate the ALARA precept of the DOE), or
- Waste is too heterogenous in composition.

For waste streams that do not meet one of more of these conditions and that are characterized based on process knowledge, the FEMP must conduct confirmatory sampling to meet the requirements of NVO-325. Confirmatory sampling is conducted in accordance with the analytical methodologies provided by SW-846 (ASL C) but at a lower sampling rate than characterization sampling. Confirmatory sampling for containerized waste is completed in accordance with the protocol established in FMPC-2185 (Sampling Plan for Drummed Waste at the FMPC), but with the following logarithmic schedule [#samples = 1 + log(#drums)] for determining number of samples:

Number of containers	Number of samples
1 - 10	2
11 - 100	3
101 - 1000	4
> 1001	5

Confirmatory sampling essentially serves as a quality assurance (QA) check on process knowledge for to ensure that materials meet the NVO-325 WAC for shipment to the NTS. To ensure that there is no confusion regarding the intended use of the data from confirmatory sampling, the "Request for Sampling and Analysis" Form indicates that confirmatory sampling results are a QA check on the process knowledge determination. If confirmatory sampling fails to substantiate the process knowledge determination, then the waste stream is re-evaluated.

During review of a material for conformance to NVO-325 WAC, FME identifies on the NTS Review Form whether sampling and analysis has been completed for a waste stream. FME is responsible for submitting a request for sampling and analysis to meet this WAC. No wastes that are amenable to sampling will be identified as meeting the NVO-325 WAC without sampling results (characterization or confirmatory) documented in the waste characterization file.

13.1.3 Data Points Exceeding a RCRA Regulatory Limit

NVO-325 requires that in addition to the statistical treatment of sampling and analysis data, any waste represented by an individual sample that surpasses the RCRA threshold for a specific analyte will not be accepted for disposal at NTS. That is, regardless of where the 90% confidence limit falls with respect to the regulatory limit, NTS will not accept the waste. The FEMP will continue to rely on statistical treatment of data for waste characterization (i.e., does not recognize the validity of point estimates for waste characterization) but will comply fully with this NVO-325 requirement. If any data points for a waste stream exceed the regulatory limit the waste stream will be determined not to meet the NVO-325 WAC. If a second valid characterization sampling of the waste stream yields results such that 1) the 90% confidence limit for all constituents of concern is below the regulatory limit, and 2) no individual data points exceed the regulatory limit, then the waste stream will be determined to be acceptable for shipment to the NTS.

13.2 Completing NTS Waste Acceptance Criteria Worksheet

[This section in process.]

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FORM NTS (11/30/92)

NTS WASTE ACCEPTANCE CRITERIA

6054

This worksheet documents evaluation of this material to determine if it meets the NVO-325 Waste Acceptance Criteria (WAC) for shipment to the Nevada Test Si

A. WASTE STREAM IDENTIFICATION

1. MEF #:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes)
3. EVALUATOR:	4. DATE:

If any of the criteria are not met, or are "unknown," then the material may not be shipped to the NTS unless corrective action is taken to alleviate the nonconformar Material status with respect to NVO-325 WAC (i.e., "Meets the Criteria?") must be revised on this form following corrective action.

B. NVO-325 WAC Pertaining to Waste Form

Meets the Criteria?	Evaluation Criteria	Corrective Action Required
__ yes __ no (NVO-325 5.5.1.1)	Low Level Radioactive Waste (LLRW): The material is defined as LLRW under DOE Order 5820.2A.	
__ yes __ no (NVO-325 5.5.1.1(A))	TRU Waste: The mate... is not regulated as TRU waste. TRU radionuclide concentration less than 100 nCi/g.	
__ yes __ no (NVO-325 5.5.1.1(B))	RCRA Hazardous Waste. The material not regulated as hazardous waste under the federal or Ohio hazardous waste regulations.	
__ yes __ no __ unknown (NVO-325 5.5.1.1(C))	Free Liquids: The material does not contain free liquids which readily separate from the solid portion of the waste under ambient temperature and pressure conditions.	
__ yes __ no (NVO-325 5.5.1.1(D))	Particulates: The material contains less than one weight percent of less-than-ten-micrometer-diameter particles, or 15 weight percent of less-than-200-micrometer particles.	
__ yes __ no __ unknown (NVO-325 5.5.1.1(E))	Gases: The material has been stabilized or absorbed such that the pressure in the waste package does not exceed 1.5 atmosphere at 20°C. The material does not contain any compressed gases as defined by Title 49 CFR 173.300, including unpunctured aerosol cans. Aerosol cans have been punctured such that the puncture disfigurements are recognizable by Real-Time Radiography. Expended gas cylinders have valve mechanism removed.	
__ yes __ no (NVO-325 5.5.1.1(F))	Stabilization: Where practical, the material has been treated to reduce volume and provide a more structurally and chemically stable waste form.	
__ yes __ no (NVO-325 5.5.1.1(G))	Etiological Agents: The material does not contain any pathogens, infectious waste, or other etiological agents as defined in 49 CFR 173.386.	
__ yes __ no (NVO-325 5.5.1.1(H))	Chelating Agents: The material does not contain chelating or complexing agents at concentrations greater than one percent by weight.	
__ yes __ no (NVO-325 5.5.1.1(I))	Polychlorinated Biphenyls (PCBs): The material does not contain any PCB materials that are regulated under TSCA. In addition, the material does not contain any PCB materials with greater than 2 ppm PCBs (Westinghouse Corporate Policy).	
__ yes __ no (NVO-325 5.5.1.1(J))	Explosives and Pyrophorics: The material does not contain any explosive or pyrophoric materials that may spontaneously combust if the container is breached.	000187

C. NVO-325 S&A Data Requirements

All individual S&A results below regulatory level: __ yes __ No	Waste sampled if practicable (including confirmatory): __ yes __ no

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14.0 Documentation Systems

Documentation systems related to waste characterization include the physical Waste Characterization Files, the Waste Characterization Database, and the Material Control & Accountability Inventories. These documentation systems are structured and maintained to meet the following objectives:

1. To provide explicit documentation of the regulatory status of each material evaluated under the waste characterization program;
2. To document the processes and decisionmaking criteria used in characterizing each material evaluated;
3. To meet regulatory requirements for records retention related to waste characterization;
4. To provide a unique correlation between inventoried waste and the supporting waste characterization documentation;
5. To support internal and external FEMP client programs that utilize waste characterization information to meet their program objectives; and
6. To provide a means for independent verification of waste characterization program performance through audit or surveillance.

14.1 Waste Characterization Files

The FME group maintains the Waste Characterization Files which contain the documentation to support characterization of each material at the FEMP. These files contain the following types of information:

- Characterization documentation;
  - MEF and/or RD/RC letter;
  - MEF worksheets;
  - Characterization review sheet;
- Supporting PK information;
  - Personnel affidavits;
  - Material Safety Data Sheets;
  - Excerpts from SOPs/Manufacturing Specifications;
  - Technical references;
- Supporting S&A information;
  - S&A Request,

- Sampling plan,
- Logbook notes,
- Analytical data report,
- Offsite data review checklist,
- Visual inspection form.

Access to the Waste Characterization Files is limited to FME and personnel assisted by FME. Files removed from the file cabinets must be signed out. Sign out cards are located. Duplicate copies of each element of the file are maintained at a separate location to provide backup documentation. The Waste Characterization Files are maintained in a secured office with limited access.

14.2 Waste Characterization Database

The FME Waste Stream Database provides a convenient way to track a material's status through waste characterization, to check the status of an evaluated waste stream, or to summarize information across broad categories of waste streams. Other common uses for the database include:

- Identify wastes similar to a waste requiring evaluation;
- support release evaluation for waste materials (spill reporting);
- update the RCRA Part A and Part B applications (Table C-1);
- identify materials for potential waste minimization initiatives;
- identify materials for treatment/disposal;

The database is updated by FME on a regular basis. A summary of the database structure is provided in Appendix A.

14.3 Materials Control & Accountability (MC&A) Inventory

The MC&A inventories provide a means for tracking the physical location of all waste materials at the FEMP. The inventories also track certain key information related to materials waste characterization that must be coordinated for materials management onsite (e.g., free liquids content and RCRA status). The MC&A inventories also provide a means for tracking nuclear materials onsite. A summary of the record structure of MC&A inventory is provided in Appendix A.

Appendix A

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Appendix B

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APPENDIX II

WASTE CERTIFICATION PROGRAM PLAN

FOR

LOW LEVEL WASTE CHARACTERIZATION AND CERTIFICATION

Appendix II

April 1993

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

P. O. Box 398704

Cincinnati, Ohio 45239-8704

PURPOSE OF WASTE CERTIFICATION PROGRAM PLAN ADDENDUM

The purpose of this addendum is to define the plan to be used by the Fernald Environmental Restoration Management Corporation (**FERMCO**) to certify FEMP Waste Stream ONL0000000008. This FEMP waste, currently packaged in drums, is to be shipped to Scientific Ecology Group (**SEG**), Incorporated for treatment (compaction), repackaging, and shipment to the Nevada Test Site subject to **FERMCO** certification.

This addendum, in conjunction with the "Waste Certification Program Plan for Low Level Waste Characterization and Certification," Revision 6, November 20, 1992, shall be followed by **FERMCO** and **SEG** to comply with NVO-325, Rev. 1 requirements.

WASTE CHARACTERIZATION AND CERTIFICATION

Certification of waste identified as Waste Stream ONL0000000008 shall be made on the basis of **FERMCO**'s characterization of the waste, which is based on process knowledge and sampling performed at the FEMP. Characterization is described in the **FERMCO** application to ship low level waste, which also includes the Waste Certification Program Plan (WCPP).

SEG Quality Assurance (QA) shall be responsible for ensuring that systems and procedures are in place and implemented to provide traceability during transport, receipt, storage, compaction, repackaging, and shipment of this waste.

SEG shall ensure that packages of waste presented for certification by **FERMCO** certifiers comply with NVO-325, Rev. 1 requirements for certification.

Quality Assurance hold points have been established, and are identified in the Waste Certification Hold Point Diagram (Figure 1) for the ONL00000000008 waste stream. Documented inspections and/or verifications will be performed at each hold point to prevent acceptance of nonconformances.

FERMCO Waste Certification Officials shall certify shipments of waste from **SEG** to the Nevada Test Site. Only shipments of waste meeting DOT (49 CFR), EPA (40 CFR), state of Tennessee, and NVO-325, Rev. 1 requirements shall be shipped.

FERMCO Waste Package Certifiers (WPCs), or Waste Certification Officials (WCOs), shall perform routine inspections and certify waste packages.

The **FERMCO** Chief WCO shall be responsible for defining and ensuring that requirements for certification are implemented.

QUALITY ASSURANCE REQUIREMENTS

1.0 ORGANIZATION

1.1 GENERAL DESCRIPTION

In accordance with contractual requirements, the **Scientific Ecology Group, Inc. (SEG)** will assume responsibility of shipment from the FEMP to their site at Oak Ridge, Tennessee. There, SEG will be contractually responsible to meet NVO-325 requirements in the treating (compacting), packaging, and shipment of the FERMCO waste to the Nevada Test Site. SEG organization charts are included as Figures 1 and 2.

There will be no change in the **FERMCO** organization. Responsibilities will remain unchanged from those listed in the WCPP, Appendix I in the current FEMP Application. The **FERMCO** organization at the FEMP will perform the duties listed in Sections 1.2.1 and 1.2.7 of this addendum. **FERMCO** will establish resident WPC and WCO at SEG to perform verification and certification work. The resident WCP or WCO will perform the **FERMCO** duties listed in Sections 1.2.2 through 1.2.6 of this addendum. These individuals will certify the waste packages and shipments to the Nevada Test Site. FERMCO WCO are ensured independence to withhold certification of any waste not meeting acceptance criteria.

SEG has a well established QA Department that reports directly to the President of SEG. SEG's QA Department is ensured independence, and they have no direct involvement in waste processing and shipping activities. The SEG quality assurance organization performs audits and surveillances of activities to ensure conformance.

SEG does not have a Quality Control Department. Routine inspections will be performed by organizations responsible for the work.

1.2 ORGANIZATION RESPONSIBILITIES

1.2.1 **SEG's** president is responsible for implementation of all parts of this WCPP applicable to SEG.

1.2.1 **FERMCO** is responsible for characterization and management of the Waste Stream ONL0000000008 at the FEMP.

- Materials Control & Accountability is responsible for maintaining and supplying inventory records for materials to be shipped to SEG.
- Sample and Waste Determination provides characterization documentation.
- Backlog & Disposition selects the waste from inventory and delivers it to the staging area for shipping to SEG.
- Quality Control verifies that the waste presented to SEG is characterized as acceptable for shipment, and that there are no associated unresolved Deviation Reports.
- Backlog & Disposition affixes the tamper indicating device (TID) to each package.

1.2.2 **SEG** is responsible for inspection, loading, and shipment of waste from the FEMP to SEG at Oak Ridge, Tennessee.

- Project Management examines each package to determine suitability for shipment, and checks that each has a related acceptable characterization for shipment.
- Project Management performs radiological surveys, loads the transport vehicles, prepares shipping paperwork, and ships the waste to SEG at Oak Ridge, Tennessee.

1.2.3 **SEG** is responsible for receipt and storage of waste received from the FEMP.

- Shipping/Receiving checks and accepts each waste shipment arriving at the SEG site.
- Central Volume Reduction Facility unloads and stages the waste for compaction.

1.2.4 **FERMCO** is responsible for overviewing receipt and unloading of the shipment at the SEG Facility, Oak Ridge, Tennessee to verify traceability.

- Quality Certification, or Quality Control, verifies that TID's are on packages received, and that the identity agrees with characterization and shipment data received independently from FERMCO.

1.2.5 **SEG** is responsible for compacting, packaging, storing, and shipping waste to NTS.

- Central/Volume Reduction Facility inspects packages to be compacted, removes overpacks as applicable, determines suitability for compaction, defines compaction method, compacts the waste, inspects containers used for packaging, packages, maintains storage, and loads transport vehicles for shipment.

- Data Systems maintains computerized tracking and reporting.

- Shipping/Receiving ships the loaded vehicle to NTS.

- Health Physics takes radiological surveys of waste packages prior to shipment, and surveys the transport vehicle.

- Health Physics calibrates radiological instruments used to make radiological surveys.

1.2.6 **FERMCO** is responsible for quality overview of the process, certification of waste packages, and certification of shipments.

- Quality Control provides routine verification of the overpacking process for compliance with this plan and applicable procedures.

- Quality Control visually examines package contents, installs TID devices on packages, and certifies each waste package.

- Quality Certification provides overview of SEG activities, verifies certification activities and documentation, and certifies shipment of waste to the Nevada Test Site.

1.2.7 **FERMCO** Audits & Appraisals is responsible for conducting QA audits, surveillances, and readiness reviews for FERMCO.

1.2.8 **SEG** QA is responsible for performing QA audits, surveillances, appraisals, and reviews as needed to ensure compliance with responsibilities identified in this WCPP and other applicable plans and procedures.

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2.0 QUALITY ASSURANCE PROGRAM

There is no change in the **FERMCO** QA Program.

SEG's QA Program is described in their QA Plan SEG/QA-100.

3.0 DESIGN CONTROL

The design of the certification program will remain essentially unchanged. However, some change in verification inspections will be made commensurate with work activities at **SEG**.

The waste compaction operation at **SEG** merely changes the physical form of the waste, and is not a design control concern. Inventory control and material traceability at **SEG** is a design concern. **FERMCO** will audit this prior to start of work, and **FERMCO** Quality Certification will monitor the **SEG** operations to ensure all changes in design impacting the certification program are controlled and approved. Changes having significant negative impact will require controlled change to this WCPP.

Procurement of containers, weighing devices, and radiological equipment by **SEG** will be subject to design control to the extent necessary.

4.0 PROCUREMENT DOCUMENT CONTROL

The only identified routine procurement of significance by **SEG** will be the procurement of packaging, which will be used as strong tight containers for the shipment of waste. The **SEG** procedure relating to procurement control is SEG/QA-4.1, "Quality Assurance Procedure Procurement Control."

5.0 INSTRUCTIONS, PROCEDURES, DRAWINGS

SEG will use their procedures for receiving, compacting, overpacking, tracking, and shipment of low level radioactive waste. These procedures, which are controlled, contain quantitative and qualitative acceptance criteria. A list of **SEG** procedures is included in Table I.

FERMCO procedures will be used in the certification of waste packages and shipments. With the exception of one new certification procedure specifically applicable to certification at **SEG**, there is no change in **FERMCO** procedures. The new certification procedure is EQP-12.08, "Certification of Compacted Low Level Waste for Shipment from **SEG** to NTS."

6.0 DOCUMENT CONTROL

SEG shall control authorization, preparation, review and approval, distribution, recall, and update of documents important to certification. Updated documents and procedures pertinent to certification shall be readily available to the WCO.

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7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

SEG's procedure for control of purchased items and services is SEG/QA-4.1, "Quality Assurance Procedure Procurement Control."

Purchases of materials, items, or systems important to certification shall be controlled by carefully prepared requisitions and purchase orders. Controls will be in place to ensure that items and services meet acceptance requirements prior to use. Any packaging procured will be designated for use as "strong tight." If this packaging is reused overpack drums, there will be no requirement that **SEG** conduct vendor or receiving inspections. However, in all instances, documentation of container inspection prior to use will be required (SEG/OP-2.2).

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Individual packages of Waste Stream ONL0000000008 in storage at the FEMP are identified with a 15-digit FEMP lot marking code number and drum number. This identification directly correlates with waste characterization data retained in the respective waste characterization files.

Upon removing drums of waste from storage at the FEMP, **FERMCO** will affix a TID to each drum prior to transfer of custody to **SEG**. Once in **SEG**'s custody, still at the FEMP, **SEG** will affix one of their unique barcodes to each drum for waste tracking purposes. Records generated by **SEG** will provide traceability to the FEMP lot number. Once the **SEG** barcode is in place, further traceability on each drum will be controlled by **SEG** Data System Waste Tracking, Procedure QA-4.3.

SEG shall use "strong tight" container to package the waste. Any new packaging procured by **SEG** will be traceable to the supplier. An undetermined number of overpack drums received from the FEMP will be removed and reused by **SEG** to package waste for shipment to NTS. Verification will be made that these drums are empty and in acceptable condition prior to reuse. All containers reused will have an affixed barcode number to provide control and traceability.

SEG will receive and store drums of waste at their site in a manner that eliminates any significant risk of mixing with **SEG**'s, or another customers waste. Prior to compaction, outerpack drums will be opened. If acceptable for processing, the innerpack drum will be removed and both the innerpack and the outerpack will each receive a new unique barcode. The old barcode on the overpack will be removed or obliterated. If it is determined through examination that the innerpack should not be removed from the overpack, the overpack will be placed in a metal box (supplied by **SEG**) to provide containment during compaction. This box will also carry a unique barcode number which permits the computer tracking system to maintain traceability to the contents.

SEG will be packaging the compacted 55-gallon drums of **FERMCO** waste into the reused 83/85 overpacks, or into newly procured 89-gallon drums. The compacted boxes of **FERMCO** waste will be packaged by **SEG** into standard 4x4x7 foot metal boxes procured by **FERMCO** under the **FERMCO** procurement system. (The boxes will comply with NVO-325 requirements.) These boxes will also be assigned a unique barcode number for tracking.

SEG will compact the 55-gallon drums or the containment box with the barcode affixed. Their experience is that the bar code remains affixed during compaction, and is fully readable for packaging identity after compaction.

SEG will maintain records of packaging activity that identify the contents of each waste package. Barcode information from the multiple compacted drums or boxes will be linked to the barcode on the waste package.

SEG will supply FERMCO WPCs and WCOs copies of all records documenting control and traceability.

FERMCO will maintain the certification files. Any records pertaining exclusively to individual packages or a shipment will become part of the respective shipment certification file. Other records of a more general nature will become part of the certification file maintained for the project.

A **FERMCO** WCO or WPC shall verify cleaning of the compactor unit prior to compaction of any **FERMCO** waste.

9.0 CONTROL OF PROCESSES

Control of processes for transport of Waste Stream ONL0000000008 to **SEG**, and receipt, compaction, packaging, and shipment to NTS will all be controlled by **SEG** procedures listed in Table I. Procedures and/or technical manuals will be used to control processes such as testing and calibration of radiological instruments and scales. No sampling or analysis of samples is anticipated.

A Waste Certification Hold Point Diagram (Figure 1), with illustration of the process flow, is included in this application to ship Waste Stream ONL00000000008.

The process for certification of waste will remain essentially unchanged except for customizing checklists to **SEG** operations and using **SEG** records for certification in lieu of the **FERMCO** Item Production/Certification/ Identification (W-65 card). Hold Point controls have been established as shown on the Certification Hold Point Diagram in Figure 1 of this addendum. Certification and process controls identified with respective hold points and controlling procedures are as follows:

Hold Point Quality FEMP (QF) 1 - FEMP/EQP-12.08

FERMCO Quality Control shall verify that the waste transferred to **SEG** at the FEMP for shipment to **SEG** at Oak Ridge, Tennessee has been characterized as low level waste meeting 40 CFR requirements. Quality Control shall also verify that a review of the files documents that there are no open Deviation Reports (nonconformances).

FERMCO Quality Certification shall review the Quality Control verification and forward the results to the **FERMCO** resident WCO at **SEG**.

Hold Point Quality **SEG** (QS) 1 - SEG/OP-4.2

SEG verifies that characterization data are in order for acceptance and shipment of waste to **SEG**. Packages are inspected to determine acceptability for taking custody and shipping to **SEG**.

Hold Point QF2 - FEMP/EQP-12.08

FERMCO WCO or WPC shall verify the waste received at **SEG** is traceable to waste characterization and shipment data.

Hold Point QS2 - SEG/OP-4.2

SEG shall not store or process packages exceeding radiological control limits without administrative controls, or other acceptable means, to eliminate the increased risk to personnel.

Hold Point QS3 - SEG/OP-2.2 and SEG/OP-4.3

- **SEG** shall perform a pre-use inspection of all reused overpacks.
- **SEG** shall perform receiving inspections for any new packaging used.

Hold Point QF3 - FEMP/EQP-12.08

FERMCO WCO or WPC shall verify that SEG has cleaned the press area prior to each start-up following compaction of any other waste. The WCO or WPC shall be vigilant in the prevention of contamination of **FERMCO** waste from any source.

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Hold Point QF4 - FEMP/EQP-12.08

FERMCO WPC or WCO shall:

- Verify temporary closure and affix a TID to each unclosed waste package left unattended during breaks or off shifts. The WPC or WCO shall verify closure, and attach or witness attachment of a TID to each filled package.
- Verify that waste container was pre-inspected.
- Verify that absorbent was added to the waste package.
- Visually examine the contents and interior of each package to verify there are no prohibited items therein.
- The TID, either stamped or initialed by the WPC or WCO, shall provide permanent closure and **SEG** authorization to move the package from the area.

Hold Point QF5 - FEMP/EQP-12.08

FERMCO WCO shall review and approve the "Package Storage & Disposal Data" report. Approval shall require validation, and verification, that data presented meets waste acceptance requirements. Also, the WCO shall verify that the materials described have been characterized as acceptable for shipment, and that all nonconformances affecting waste certification have been closed.

Hold Point QF6 - FEMP/EQP-12.08

FERMCO WPC or WCO shall:

- Verify that the TID affixed by a WPC or WCO is still on the package.
- Verify contents of each waste package is traceable to an acceptable waste characterization.
- Inspect waste packages to ensure physical condition, markings, and labeling meet 49 CFR and NVO-325, Rev. 1 requirements.
- Verify that each package is listed on an applicable Package Storage & Disposal Data Report signed by a WCO, and that all information on the package agrees with the PSDD report and associated documentation.
- Verify appropriate disposition of all nonconformances impacting the waste package being certified.
- Verify the NV-211 label, and affirm that it is signed and dated prior to applying it to the respective package.
- Affix a signed and dated NV-211 sticker on each acceptable package.

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Hold Point QS4 - SEG/OP-4.4Q

SEG shall for each incoming transport vehicle to be used to transport waste to NTS:

- Make a visual inspection of the transport van.
- Make radiological checks.

Hold Point QS5 - SEG/OP-4.4Q

SEG shall:

- Perform a visual inspection of each outgoing shipment.
- Perform radiological checks of the transport vehicle to verify compliance with 49 CFR requirements.

Hold Point QF7 - FEMP/EQP-12.08

FERMCO WPC or WCO shall:

- Verify that an NV-211 sticker dated and signed by an authorized **FERMCO** WPC or WCO is securely affixed to each accepted waste package.
- Verify that **SEG** has inspected the trailer.
- Verify that **SEG**'s radiological checks on the transport van have been made and are within acceptable limits.
- Verify that waste packages loaded for shipment are those listed on the respective "Package Storage & Disposal Data" report, which is signed by an authorized **FERMCO** WCO.

Hold Point QF8 - FEMP/EQP-12.08

FERMCO WCO or WPC shall witness an operability check, and either conduct or witness a limited road worthiness check of each vehicle transporting **FERMCO** waste to NTS.

Hold Point QF9 - FEMP/EQP-12.08

FERMCO WCO shall:

- Examine all shipment paperwork for completeness and accuracy.
- Verify that all required certification checks have been completed.
- Verify that all authorizations are complete and valid, and that the certification file is complete.
- Complete and sign a certification statement as required by NVO-325, Rev. 1.

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- Verify that **SEG's** "Radioactive Material Shipment Release Checklist" has been completed to the extent applicable.

- Verify that the Bill of Lading, manifest and/or tally sheet, "Package Storage & Disposal Data" report, and the **FERMCO** certification statement are sent with each shipment, and that driver's instructions have been give to the driver.

Post shipment requirement - FEMP/EQP-12.08

FERMCO WCO shall ensure that copies of the Certification and the "Package Storage & Disposal Data" report are faxed within 24 working hours to DOE/NV, and Reynolds Electrical & Engineering Company, Inc., at Area 5. Failure to communicate due to faulty communication equipment at the sending or receiving site shall not be cause for a nonconformance.

General requirement

The **FERMCO** WCO at **SEG**, and Quality Certification at the **FEMP** shall maintain certification files in accordance with requirements outlined in this WCPP, and this addendum to the plan.

10.0 INSPECTION

Inspections made by **FERMCO** will be performed by persons other than those performing or supervising work. However, due to their benign nature, inspections currently identified to be performed by **SEG** will not necessarily conform to this requirement.

Inspection hold points have been identified in the Waste Certification Hold Point Diagram. For the purpose of certification, completion and signing of a properly identified checklist or inspection report by an authorized person constitutes an inspection. Key inspections identified in NVO-325, Rev. 1 are addressed as follows:

- **SEG** shall inspect waste containers prior to use (SEG/OP-2.2).

- Verification and certification of the contents of each container shall be based on the waste characterization performed at the FEMP and traceability to the waste packaged. **FERMCO** inspection of packaging operations shall initially be conducted an average of no less than twice during each shift of operation. Based on informal review by the **FERMCO** Chief WCO confirming no ongoing significant problems, the frequency may be reduced to an average of no less than once each shift of operation. Inspections shall be performed by WPCs and/or WCOs.

- **SEG** shall inspect the final packages prior to submittal for certification. A WPC, or WCO, shall inspect each package prior to certification.

- A **FERMCO** WCO shall inspect each shipment and associated paperwork.

11.0 TEST CONTROLS

Tests affecting certification are not anticipated. However, should testing be required, controls shall be implemented that conform to NVO-325, Rev. 1 requirements.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

SEG measuring and test equipment shall be controlled in accordance with NVO-325, Rev. 1 requirements and the WCPP. Examples of measuring and test equipment to be controlled are torque wrenches, radiation measuring equipment, and weighing devices.

Each instrument shall have a unique identification for calibration control.

Records of calibration shall be maintained, and systems shall be in place to ensure timely recall of instruments requiring re-calibration.

SEG test equipment and measuring devices shall be tagged or labeled to indicate they are calibrated or certified for continued use. Out of calibration devices shall be tagged out-of-service and segregated. If segregation is not practicable, out-of-service tags must be prominently displayed or a security system must be employed to prevent inadvertent use.

NOTE: The labeling or tagging of torque wrenches may be impractical due to size and condition of use.

Calibration performed by **SEG** is confined to the radiological instruments calibration laboratory. Temperature and humidity shall be measured and controlled as necessary for calibration. Calibration of torque wrenches and weighing devices is contracted through calibration of torque wrenches SEG procurement.

13.0 HANDLING STORAGE AND SHIPPING

SEG shall handle, store and ship waste in a manner that will not affect the certification status. **FERMCO** WPCs shall apply TID to each package, and packages shall be sheltered or otherwise protected prior to shipment. All handling and storage shall comply with ALARA concepts.

SEG transporter (driver) will be provided additional tamper indicating devices (seals) for trailers.

All seal numbers will be recorded on the shipping paperwork. The driver will initial and date a record of seals removed and installed during each load inspection made in route. Broken seals will be kept and presented with the shipping papers upon arrival at the NTS.

SEG shall seal vans used in shipment with a numbered tamper indicating device, and shall control the shipment by routing.

14.0 INSPECTION, TEST, AND OPERATIONAL STATUS

Items rejected by **SEG** for use shall either be tagged or clearly marked unsuitable for use (e.g., for rework, reject, etc.). **FERMCO** checklists shall be designed to verify documentation of satisfactory completion of any required preceding inspections. Nonconforming items identified by **FERMCO** will be tagged as nonconforming using tags exhibited in the WCPP. NV-211 stickers will be used to control certification and loading of packages for shipment.

15.0 CONTROL OF NONCONFORMING ITEMS

SEG Procedure SEG/QA-15.1 will be followed in controlling nonconformances identified by **SEG** personnel. Copies of these nonconformances and resolutions shall be provided to the WCO, who will disseminate the information to WPCs. Nonconformances identified by **FERMCO** personnel will be controlled in accordance with the WCPP and the applicable **FERMCO** procedure.

Nonconformances of lesser consequence will not require issuance of a nonconformance report if the nonconforming condition is corrected within a short period. However, should the nonconforming item(s) be left unattended, nonconformance tags will be applied. Records of all nonconformances will be compiled for tracking and corrective action purposes.

Nonconformances shall be evaluated to determine root causes and determine the need for corrective action. Requests for corrective action and responses thereto shall be documented on a corrective action report as required by the controlling documents in Section 16.0 of this addendum.

16.0 CORRECTIVE ACTIONS

SEG Procedure SEG/QA-15.1 will be followed in identifying, developing, and implementing corrective actions for nonconformances identified by **SEG** personnel. The root cause evaluation performed in Section 15.0 of this addendum is included in the corrective action report. Copies of the corrective action reports shall be provided to the WCO, who will evaluate impact upon the certification program. Negative impact will require interface between **SEG** and **FERMCO** to achieve resolution.

Corrective actions identified as a result of nonconformances identified by **FERMCO** personnel will be controlled in accordance with the WCPP and the applicable **FERMCO** procedure (SSOP-0023) listed in Appendix I, Table I of the current application.

17.0 QUALITY ASSURANCE RECORDS

Minimum requirements for defining and maintaining QA records are defined in NVO-325, Rev. 1. QA records generated at **SEG** pertinent to the certification of Waste Stream ONL00000000008 at **SEG** will, while at that site, be maintained by the WCO. **SEG** shall maintain originals of all records generated by their personnel. Records shall legible, identifiable, and retrievable. All QA records to be valid must be signed and dated. Mistakes or corrections in records shall have a single line drawn through the changed data and shall be signed or initialed and dated.

FERMCO shall provide **SEG** copies of all audits and surveillances, nonconformance reports, approved "Package Storage & Disposal Data" reports, and signed certification statements.

After making copies, the **FERMCO** WCO at SEG shall forward all certification records to the FEMP for storage. The forwarded records shall be stored at the FEMP initially in a fire resistant safe, or in standard metal file cabinets located in an area protected with an automatic sprinkler system. For permanent storage, the records will be transferred to the FEMP storage repository, or a contracted repository having an approved fire protection system. Copies of certification files retained by the WCO at SEG shall be retained by the WCO at SEG for the duration of the project.

18.0 AUDITS/SURVEILLANCES

SEG has an audit and surveillance program, and conducts scheduled audits and surveillances of their operations. Information copies of **SEG** audits and surveillances impacting waste certification shall be distributed to the **FERMCO** Chief WCO.

FERMCO Independent Program Assessment and Oversight shall conduct a readiness audit prior to any certification and shipment of waste from the **SEG** site. **FERMCO** audits are conducted in accordance with the WCPP and applicable **FERMCO** procedures. With the presence of resident **FERMCO** certifiers at **SEG**, further audit and formal surveillance is optional up to one year from the current audit date.

19.0 TRAINING

All **SEG** and **FERMCO** personnel associated with waste management and the certification program shall be trained on the requirements of the WCPP and NVO-325, Rev. 1. All persons who generate, package, certify, prepare data, perform related radiation surveys, or perform the associated quality functions shall have received training in the requirements and implementing procedures for those parts of the certification program in which they are involved.

19.0 TRAINING (contd)

Initial training to requirements of the WCPP and NVO-325, Rev. 1 will be given to eligible **SEG** personnel by a **FERMCO** technical instructor utilizing the **FERMCO** training program. The presenter of future training is optional, but the training program in any case shall meet NVO-325, Rev. 1 requirements.

Similar to Ohio, Tennessee has adopted the Federal program for implementing RCRA. The Tennessee regulations for hazardous waste identification are promulgated under Tennessee Hazardous Waste Management Rules 1200-1-11. WCOs and WPCs shall receive, as a minimum, informal instruction on applicable state of Tennessee regulations for shipment of low level waste.

All training shall be effective for the lesser of a period of two years or until major change.

SEG auditors shall have training commensurate with the scope, complexity, or special nature of activities to be audited. Auditors are given training and orientation on the requirements of 10 CFR 50, Appendix B and NQA-1 licensing fundamentals.

FERMCO auditors are trained and qualified in accordance with FERMCO Procedure EQP-6.07, "Certification of Quality Assurance Audit Personnel."

Records of training course content, exams, and test results shall be maintained as QA records, and shall be available for review by audit personnel.

FERMCO will maintain, at the FEMP, all records of training presented by **FERMCO**, which includes NVO-325, Rev. 1 WCPP training given to **SEG** personnel.

SEG document control will maintain records of **SEG's** training, which includes training on procedures.

TABLE I

MASTER PLANS, MANUALS, AND PROCEDURES

SEG SITE STANDARD OPERATING PROCEDURES

OP-2.2	Overpacking System
OP-2.8	Press (Supercompactor) Operation
OP-4.2	Radioactive Material Receipt
OP-4.3	Data Systems Waste Tracking
OP-4.4Q	Radioactive Material Shipment
SEG/QA-4.1	Quality Assurance Procedure Procurement Control
SEG/QA-7.2	Approved Supplier List
QA-10.1	Inspection
SEG/QA-15.1	Nonconformance Reporting
SEG/QA-100 Revision 3	Quality Assurance Program

FERMCO PROCEDURES

EQP-12.08	Certification of Compacted Low Level Waste for Shipment from SEG to NTS

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FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION		DOCUMENT NUMBER: EQP-12.08
ENVIRONMENTAL	SUBJECT: CERTIFICATION OF COMPACTED LOW LEVEL WASTE FOR SHIPMENT FROM SEG TO NTS	REVISION: 1
QUALITY		Page 1 of 23
PROCEDURE	AUTHORIZED: (Manager, Quality Assurance)	Effective Date: 5/10/93

NON-CONTROLLED COPY

1.0 SCOPE

This procedure provides instructions and requirements for verification and certification of Waste Stream ONL0000000008 waste for shipment from Scientific Ecology Group, Inc., Oak Ridge, Tennessee to the Nevada Test Site. Certification of packages and shipments is dependent on DOE/NV approval of the application to ship the waste stream.

2.0 PROCEDURE

Note: For List of Definitions see Attachment A.
For List of Acronyms see Attachment B.

2.1 TRANSFER OF CUSTODY AT THE FEMP FROM FERMCO TO THE SUBCONTRACTOR

WASTE PACKAGE CERTIFIER (WPC) (AT THE FEMP) SHALL:

2.1.1 Obtain characterization documentation for each shipment from the Backlog and Disposition Group (formerly Waste Shipping).

2.1.2 Verify that characterization documentation received is acceptable to support shipment of all packages in the shipment. Documents to be valid require signature of a representative of Waste Characterization (formerly FME).

2.1.3 Verify that packages being shipped are identifiable to the waste characterization data.

2.1.4 Verify there are no open Deviation Reports(s) for packages being shipped.

2.1.5 Sign a statement of compliance that attests that requirements of Items 2.1.1 through 2.1.4 have been met. Forward the document to the Waste Certification Department.

WASTE CERTIFICATION OFFICIAL (WCO) (AT THE FEMP) SHALL:

2.1.6 Review the shipment package to ensure Items 2.1.1 through 2.1.5 have been satisfactorily performed by the WPC.

2.1.7 Review the characterization data to determine acceptability and applicability to the packages being shipped.

2.1.8 Sign the statement of compliance (Attachment I) received from the WCO to signify acceptance, and forward the entire package to the WCO at the subcontractor's site. Maintain a copy of the package for the Quality Certification file at the FEMP.

2.2 PROCUREMENT OF CONTAINERS

WCO SHALL:

2.2.1 Obtain copies of the subcontractor's container purchase and inspection records for containers that are to be used in packaging Waste Stream ONL0000000008.

2.2.2 Verify that containers procured by the subcontractor for packaging are obtained from a supplier on the subcontractor's approved supplier list.

WPC or WCO SHALL:

2.2.3 Prior to use, verify in writing that a selected number of the containers can be traced to the supplier identified in Item 2.2.2 above.

2.3 VERIFICATION AND OVERVIEW OF RECEIPT OF WASTE AT SUBCONTRACTOR'S SITE

WCO SHALL:

2.3.1 Receive the shipment package referenced in Item 2.1.8 and maintain each separately in the certification file.

2.3.2 For each shipment received, obtain a copy of the shipment manifest and the Waste Package Survey Report. (Attachment G)

2.3.3 Match and combine, by shipment, the paperwork referenced in Items 2.3.1 and 2.3.2.

2.3.4 Verify that packages appearing on the manifest are traceable to characterization documentation in the file which has been verified as acceptable. Place a signed statement in the file as follows:

I have examined the manifest for Shipment 741 Number _____, and have verified that the packages identified thereon are traceable to characterization that was checked by the approved Waste Certification Official who, based on independent checking and confirmation of previous verification, has signed to affirm that the characterization was satisfactory for shipment.

2.3.5 Maintain a file for reference for the duration of the project. The file is to be available for use by all certification personnel. When no longer needed, send the file to FEMP Waste Certification.

WPC or WCO SHALL:

2.3.6 Verify that each waste container unloaded has a TID affixed, and there is no evidence of tampering.

2.4 OVERVIEW OF REMOVAL OF INNER CONTAINER(S) FROM OVERPACKS 6054

WPC or WCO SHALL:

The WPC shall verify and document the following at least twice on each full shift of operation:

Note: This frequency may be reduced by authorization of the Chief Waste Certification Official.

2.4.1 That the exterior containers are identified with the subcontractor's barcode.

2.4.2 That waste material is FERMCO Waste Stream ONL0000000008 material.

2.4.3 That the material being handled is sufficiently isolated and identified to prevent inadvertent misidentification or mixing with other materials.

2.4.4 The placement of subcontractor's barcode label on inner container.

2.5 OVERVIEW OF STORAGE AND HANDLING OF WASTE AND WASTE CONTAINERS

WPC or WCO SHALL:

A minimum of twice daily on each shift worked, randomly check the storage and handling of FERMCO Waste Stream ONL0000000008. Check that:

Note: This frequency may be reduced by authorization of the Chief Waste Certification Official.

2.5.1 Waste is identified and segregated from other materials.

2.5.2 Any spilled waste is accounted for, repackaged, and properly identified.

2.5.3 Waste coming in contact with contaminants is accounted for, repackaged, properly identified, and segregated.

Note: If FERMCO retains ownership of any contaminated waste, issue a deviation report and affix a nonconformance tag to the affected material.

2.5.4 Waste is handled and stored in a safe manner. Report unsafe conditions to the subcontractor immediate supervisor and FERMCO supervisor for evaluation and resolution.

2.5.5 FERMCO overpack containers removed at the subcontractor's facility are accounted for and segregated until used again to package Waste Stream ONL0000000008.

2.6 COMPACTION, AND PACKAGING OF THE COMPACTED WASTE (PUCKS)

WPC or WCO SHALL:

2.6.1 Prior to compaction of FEMP waste, verify that the press area was either last used for FEMP Waste Stream ONL0000000008 waste, or that the press has been thoroughly cleaned.

2.6.2 While still in the packaging area, do the following for each waste package filled:

2.6.2.1 Verify that waste container used was pre-inspected.

2.6.2.2 Verify waste absorbent is added to each package.

2.6.2.3 Verify space in package is utilized to the extent practicable.

2.6.2.4 Verify by visual examination that only pucks and absorbent are packaged (no free liquids or other prohibited materials).

2.6.2.5 Verify through visual examination that gaskets in lids are undamaged, and not deteriorated.

2.6.2.6 Verify that each unclosed waste package left unattended during breaks or off shifts is temporarily closed, and witness the attachment of a TID.

2.6.2.7 Verify final closure and attachment of a TID stamped or initialed by the WPC or WCO in attendance.

2.6.3 A minimum of twice daily on each shift worked, randomly check the compaction and packaging of FERMCO Waste Stream ONL0000000008 waste to verify:

Note: The frequency of this check may be reduced as authorized by the Chief Waste Certification Official.

2.6.3.1 Using barcode reader, that identities of drums or boxes being placed on conveyor for compaction are traceable to the FERMCO acceptable inventory list.

2.6.3.2 That identities of parent drums or boxes being packaged are correctly recorded and identified with the receiving daughter drum or box.

2.6.3.3 That drums used for packaging are either 83/85 gallon drums originally received with the waste shipped from FERMCO, or new 89 gallon drums procured by the subcontractor that are traceable to an approved supplier. If metal boxes are being used as overpacks, verify that the overpack box is a FERMCO purchased container that is approved for shipment to NTS.

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Note: Reference file is maintained by WCO for list of approved suppliers and drums available for use.

2.6.3.4 That internal volume of waste is being measured and recorded properly.

2.6.3.5 The use of absorbent is documented as to type and amount.

2.6.3.6 That a calibrated torque wrench is being used to torque the bolt ring closure to 45 ±5 foot pounds.

2.7 CERTIFICATION OF WASTE PACKAGE

WPC or WCO SHALL:

2.7.1 Prior to examination, verify that each waste package has been surveyed for radiological contamination and that results do not exceed 1000 dpm/100 cm^2 beta-gamma or 20 dpm/1000 cm^2 alpha.

2.7.2 Verify that the contents of each waste package is acceptable for shipment to NTS by checking records of compaction against listings of acceptable materials for compaction.

Note: The resident WCO maintains a file of the wastes acceptable for compaction, along with supporting documentation, which is also available to the Waste Package Certifiers.

2.7.3 Verify that there are no unresolved Deviation Reports written against the waste package or material contained therein. Reference file maintained by WCO.

2.7.4 Verify there are no hold or nonconformance tags on the container.

2.7.5 Verify that a Waste Package Quality Control Record sticker (Attachment D) is on the container and that at least the last three blocks have been stamped or initialed by the subcontractor.

2.7.6 Verify secure closure of each package by checking that:

- Bolt rings on drums appear to be well seated and tight, and the lock nut is snugged tight.
- All box lids are bolted tightly with all bolts in place. Boxes having clips in addition to bolts have the clips securely locked in place.

2.7.7 Verify that the gross weight of each package does not exceed the following capacity limits:

- Maximum gross weight for drums is 1200 pounds (544.3 kilograms).
- Maximum gross weight for each box must not exceed 9000 pounds (4082 kilograms) nor the design weight capacity of the box.

2.7.8 Verify that markings and other required information are correctly placed on each package as follows:

- All lettering shall be 1/2-inch or larger.
- On drums, information shall be placed on the top of each drum, and also on the side, as near to the top as practicable.
- On boxes, information is to appear on opposite sides near the top of the box, but may also appear on top of the box.
- Marking shall conform to 49 CFR 172 Subparts D & E requirements, and shall appear in grouped patterns against a contrasting background.
- Each package shall have a "Radioactive - LSA" marking on the top or side, or both.
- Each package containing 0.052 curies of uranium, or more, shall be marked "RQ" on the top or side, or both. The "RQ" shall be in close proximity to the "Radioactive - LSA" marking.
- Each package shall be marked with the gross weight in pounds and kilograms.
- Each package shall have a bar code label which contains the 8-digit shipment number (e.g. WML93204), a 6-digit package identification number unique to each shipment, and the 13-digit waste stream number (ONL0000000008). Using a barcode reader, check 10% of the packages, or more, to ensure barcoding is correct.

Note: The shipment number consists of the three alpha digits "WML", two numeric digits indicating the last two numbers of the fiscal year (e.g. 93), and three numeric digits indicating a shipment sequence number within that fiscal year. Neither the shipment number, the Waste Stream number, or the package identification number is to contain hyphens or gaps between digits.

2.7.9 Verify that each package is in acceptable physical condition, and is not overly unsightly in appearance. Examination criteria shall include holes, signs of leaking, dents affecting container integrity, sharp creases, flaking rust, and bulges.

2.7.10 Verify erroneous markings (incorrect or misleading information) are obliterated prior to acceptance for certification.

2.7.11 Verify that radiation surveys have been taken and that results for each package do not exceed 200 mrem/hr at contact.

2.7.12 Sign and date an NV-211 sticker and affix it to the top of each waste package meeting the above waste acceptance criteria. Make sure the NV-211 wording is correct. Also, the "TITLE" line must show "Waste Package Certifier" or Waste Certification Official" as applicable, and the "ORGANIZATION" line must show "FEMP".

2.7.13 Install a TID (nylon cable tie) on each package certified. For drums, attach the TID around the retainer ring bolt flanges back of the bolt head and nut, and snug securely. For boxes it may be necessary to install two TID's to provide adequate detection of tampering. In either case, the certifier of each package shall stamp the tab on each TID with their inspection stamp, or as an alternative, shall initial the tag with a permanent marker.

2.7.14 Maintain a record of packages certified, and provide copies and supporting information to the WCO for the certification files.

2.7.15 Maintain continuously updated files on nonconformances, for reference and tracking purposes.

WCO SHALL:

2.7.16 Review package certification data, and place in file by shipment number for use at time of shipment.

2.8 VERIFICATION OF LOADING OF VEHICLE FOR SHIPMENT

WPC or WCO SHALL:

2.8.1 Prior to loading of vehicle:

a. Verify that radiological survey results for the empty trailer are no greater than 1000 dpm/100 cm^2 beta-gamma and 20 dpm/100 cm^2 alpha removable contamination, and no greater than 0.1 mrem/hr radiation level on accessible areas.

b. Verify that an examination of the general condition of the transport vehicle was performed by the subcontractor.

c. Examine the empty trailer to verify there are no:

1. liquid or oily substances on interior surfaces
2. holes
3. evidence of leaks causing pooling of water on floor surfaces.
4. rotted or unsound flooring
5. structural damage
6. closure mechanism deficiencies.

d. Examine the tires on the trailer per the following acceptance criteria:

1. Tread minimum of 3/32-inch

2. No tread separation

3. No exposed fabric (e.g. result of peeled, abraded, or worn off rubber)

4. No punctures

5. No significant bulging

6. No obvious deflation

2.8.2 Loading the vehicle:

a. Verify that the shipment number and package numbers agree with the PSDD report already approved and signed by a WCO. Also, record the trailer number being loaded.

b. Verify the presence of a properly completed NV-211 label (sticker) with the following data entered:

1. The date of certification.

2. The signature of an approved Waste Package Certifier or Waste Certification Official.

3. Either "Waste Package Certifier" or "Waste Certification Official" entered as applicable for the certifier signing the label.

4. "FEMP" as the Organization.

c. Verify that waste packages are not significantly damaged in loading.

d. Verify that the loaded packages are at least blocked and/or braced to prevent movement during shipment.

e. Take a minimum of two, and a maximum of four, pictures to show that the shipment is loaded correctly and containers appear undamaged. The shipment number, trailer number, date, and photographer's signature shall be written on each photograph.

f. When vehicle is left unattended, verify that the rear doors are closed and sealed with a tamper indicating device. Otherwise, the interior of the vehicle and contents will need to be verified as undisturbed.

g. Upon completion of loading, verify that a numbered TID (seal) is placed on the rear doors. Record the seal number.

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2.9 OUTGOING VEHICLE CHECK

WPC or WCO SHALL:

2.9.1 Verify radioactive placards are displayed on all four sides of the van used for transport.

2.9.2 Verify a numbered TID (seal) is securely on the rear closure mechanism, and that the number agrees with that on the Bill of Lading. Check the number against the number recorded upon completion of loading.

2.9.3 Take pictures of the loaded, sealed, and placarded vehicle from two opposite angles to show vehicle and placarding. Also take a picture of the seal with the trailer number included. The shipment number, trailer number, TID (seal) number, date, and photographer's signature shall be written on each photograph.

2.9.4 Verify that the following are operational on the vehicle/trailer: [A completed SEG Vehicle Condition Checklist (Attachment H) can be accepted as documentation that this was done]

a. headlights

b. turn signals

c. brake lights

d. horn

e. Tire condition, per section 2.8.1 (d.) of this procedure. (Tread depth of tires on tractor shall be no less than 4/32".)

2.10 VERIFICATION AND DISPOSITION OF PACKAGE STORAGE & DISPOSAL DATA REPORT

WCO SHALL:

2.10.1 Check the "Package Storage & Disposal Data" Report

a. To the extent practicable, verify all data entries are correct.

b. Verify packaging is either 83, 85, or 89 gallon drums, or boxes that are approved for shipment to NTS.

c. Verify all drum gross weights are ≤1200 pounds (≤544,3 kilograms).

d. Verify gross weights of boxes are ≤9000 pound (≤4082 kilograms), and do not exceed weight capacity limits of the container.

e. Verify that all radiation surveys at surface are ≤200 mRem/hr.

f. Verify that all packages listed were certified in accordance with the WCPP and this procedure.

2.10.2 Approve report by signing and dating.

2.10.3 Make three copies of report. Retain one copy in file. The original and one copy is to be sent with the shipment. The remaining copy is for the subcontractor's files.

2.11 VERIFICATION OF SHIPMENT RECORDS

WCO SHALL:

Obtain copies of the following records for each shipment and verify to extent practicable that they are complete and accurate:

a. Bill of Lading

b. Vehicle Condition Checklist

c. Radioactive Material Shipment Release Checklist

d. Package Radiation and Contamination Surveys

e. Vehicle Radiation and Contamination Release Surveys

f. Hazardous Waste Certification

g. Weigh tickets for loaded vehicle

2.12 CERTIFICATION OF SHIPMENT

WCO SHALL:

2.12.1 Verify that the requirements of this procedure have been met as pertaining to the shipment being certified.

2.12.2 Perform an acceptability check of the records that are to be maintained as required by Paragraph 2.15.1 of this procedure.

2.12.3 Verify that the Bill of Lading, manifest and/or tally sheet, "Package Storage & Disposal Data" report, and the FERMCO certification statement are sent with each shipment, and that driver's instructions have been given to the driver.

2.12.4 Complete and sign the FEMP Certification Statement (Attachment E). In entry for seal number, list current seal (TID) number on outgoing trailer, and note that seals will be changed in route by driver each time load is inspected.

2.12.5 Send original of Certification Statement with shipment, file one copy, and give one copy to the subcontractor.

2.13 VERIFICATION AND TRANSMITTAL OF ELECTRONIC DATA TO NTS

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CHIEF WASTE CERTIFICATION OFFICIAL (CWCO) SHALL ENSURE ELECTRONIC DATA TRANSMITTED TO NTS IS CHECKED:

Electronic data for each shipment will be transmitted at the FEMP in accordance with the REECo/WMD "Low-Level Waste Information System Data Transmission Guide." A printout of the data being transmitted shall, as a minimum, be spot checked by Quality Certification.

2.14 REPORTING AND HANDLING DISCREPANCIES

WPC & WCO SHALL:

Note: Current FERMCO procedure for "Deviation and Corrective Action Reporting" is SSOP-0023.

2.14.1 Report discrepancy to the subcontractor for review and confirmation of error.

2.14.2 If a discrepancy is not readily resolved, attach a FERMCO nonconformance tag to the affected material and issue a Deviation Report (DR).

2.14.3 Place copy of DR and subsequent updates in Waste Certification File maintained by WCO.

WCO SHALL:

2.14.4 Transmit to FERMCO, by means of facsimile, copies of DRs and CRs at each stage of completion.

2.14.5 Maintain liaison with subcontractor in the disposition of nonconforming materials, and in the development of corrective action.

2.15 QUALITY ASSURANCE RECORDS

WCO SHALL:

2.15.1 The following records pertinent to certification for shipment shall, as a minimum, be maintained in file for each waste shipment certified:

a. Package Storage & Disposal Data Report.

b. All nonconformance resolutions specific to individual shipments including copies of all DRs and CARs.

c. All surveillances, checklists, and/or inspection reports pertinent to individual shipments used as a basis for certification.

d. Vehicle Condition Checklist.

e. Radioactive Waste Shipment and Disposal Manifest.

f. Uniform Hazardous Waste Manifest and/or Bill of Lading.

g. Exclusive Use Instructions.

h. Package Radiation and Contamination Surveys.

i. Vehicle Radiation and Contamination Surveys.

j. FEMP Certification Statement.

k. Nuclear Materials Transaction Report (741 Form).

l. FERMCO Nuclear Materials Shipping Order (if generated).

m. FERMCO RCRA (non-hazardous and NVO-325 compliance characterization determination), or documentation that directly references the characterization documentation.

n. Copies of weight tickets for loaded vehicle.

o. Subcontractor's Hazardous Waste Certification.

p. Subcontractor's Shipment Release Checklist.

2.15.2 Quality Assurance Records not included in the above, shall be maintained in a project file. Types of records to be maintained are as follows:

a. Records of audits of the waste certification program.

b. Records of surveillances performed as part of the certification program.

c. Logs containing certification data.

d. Checklists used to monitor activities.

e. Records of nonconformances.

f. FERMCO statements verifying completion of outstanding deviation reports (applicable to shipments leaving the FEMP).

g. FERMCO statements verifying completion of waste characterization (applicable to shipments leaving the FEMP)

h. Subcontractor's Waste Package Survey Report for waste packages shipped from the FEMP to the subcontractor's site.

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2.15.3 Copy records weekly and send originals to FERMCO Quality Certification. Maintain copies at the subcontractor's site for the duration of the project.

Note: Weekly transfers of records to FERMCO shall be considered delinquent if not received at the FEMP within 10 working days from the required copying date.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements.

3.2 DOE Order 5700.6C, Quality Assurance.

3.3 DOE Order 5820.2A, Radioactive Waste Shipment.

3.4 SSOP-0023, Deviation and Corrective Action Reporting.

4.0 ATTACHMENTS

4.1 Attachment A - Definitions

4.2 Attachment B - Acronyms

4.3 Attachment C - Prohibited Materials List

4.4 Attachment D - SEG Waste Package Quality Control Record Sticker

4.5 Attachment E - FEMP Certification Statement

4.6 Attachment F - NV-211, Packaging Certification sticker

4.7 Attachment G - SEG Waste Package Survey Report

4.8 Attachment H - SEG Vehicle Condition Checklist

4.9 Attachment I - FERMCO Statement of Compliance

DEFINITIONS

Application - For the purpose of this procedure, the document that contains the request to ship FEMP Low Level Waste to the Nevada Test Site. It contains Generator Information, Waste Characterization Program, Waste Stream Information, Waste Certification Program Plan, Exemption Requests, and Procedures and Supporting Documentation.

Certification - The process of determining, verifying, and attesting in writing that Waste Acceptance Criteria (WAC) have been met.

Certified - Identification, in writing, that personnel or items have complied with a specific set of criteria, including a signature of a responsible party.

Chief Waste Certification Official - A designated FERMCO Waste Certification Official having overview authority over Waste Package Certifiers and alternate (all other) Waste Certification Officials.

Daughter Container/Package - A package that contains one or more compacted containers of waste.

Free Liquid - Liquids which readily separate from the solid portion of a waste under ambient temperature and pressure conditions.

Low Level Waste - All radioactive waste not classified as high-level waste, spent nuclear fuel, TRU waste, uranium mill tailings, MW or 11e(2) by-product material as defined in DOE Order 5820.2a. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW, provided the concentrations of TRU is less than 100 nanocuries per gram.

Nevada Test Site - A government owned facility approximately 65 miles northwest of Las Vegas, Nevada, which receives and disposes of low level Department of Defense waste on site.

NV-211 Sticker - A sticker applied to waste packages to provide highly visible confirmation that the waste is certified as meeting all Nevada Test Site waste acceptance criteria. As required by NVO-325, the sticker must be dated and signed by either a Waste Package Certifier or Waste Certification Official.

Overview - The act of randomly monitoring work activities and examining documentation to ascertain compliance with program requirements.

Package - The packaging together with its contents.

Packaging - The assembly of components necessary to ensure compliance with U.S. Department of Transportation (DOT), EPA, and U.S. Department of Energy Nevada Operations Office (DOE/NV) requirements (see Title 49 CFR 173.403(u)). It does not include radioactive or hazardous components of the waste.

Parent Container/Package - A container of waste that will be compacted and packaged into another container along with other compacted containers of waste.

DEFINITIONS

Qualified - Having complied with the specific requirements or precedent conditions.

Radioactive Waste - Solid, liquid, or gaseous material that contains radioactive nuclides regulated under the Atomic Energy Action of 1954, as amended, and of negligible economic value considering costs of recovery.

Solid Waste - Waste material that is an essentially dry, solid form. The waste stream may include well-drained container or liquids which have been entrapped or otherwise solidified so that they will retain their solid form without the presence of free liquids during handling, transportation, storage, or disposal. Viscous waste materials is determined to be a solid by testing in accordance with American Society for Testing Materials Standard D 4359, "Standard Test Method for Determining Whether a Material is a Liquid or a Solid."

Tamper Indicating Devices - Devices that may be used on containers, and because of their uniqueness in design or structure, reveal violations of containment integrity. Tamper indicating devices include seals, mechanisms, containers, and enclosures.

Verification - The process of witnessing activities and examining records to document correctness.

Waste Package Certifier - A FERMCO employee who has been trained, qualified by Quality Assurance, and approved by DOE/NV to certify waste packages for shipment to the Nevada Test Site.

Waste Certification Official - A FERMCO employee who has been trained, qualified by Quality Assurance, and approved by DOE/NV to certify waste packages and shipments of waste to the Nevada Test Site.

Waste Certification Program Plan - A plan that is appended to the application to ship waste to the Nevada Test Site that defines the program for certification of waste. The requirements for the plan can be found in NVO-325 and DOE Order 5820.2A.

Waste Stream - Waste which is categorized by a similar characterization process and/or point of generation.

Waste Stream Identification Number - A unique two-part, 13-character alphanumeric code which identifies the generator's organization and waste stream number.

Waste Stream ONL0000000008 - Low Level Waste defined and listed in the FEMP Application to Ship Waste to the Nevada Test Site, Revision 4.2, Addendum I, dated February 1993. This waste stream is comprised of a portion of the FEMP residue wastes which is being compacted at a subcontractor's facility. It includes both low and high grade residues, and objects contaminated with low and/or high grade residues.

ACRONYMS

ALARA	As Low as Reasonably Achievable
CFR	Code of Federal Regulations
CWCO	Chief Waste Certification Official
DOE	U.S. Department of Energy
DOD	U.S. Department of Defense
DOE/NV	U.S. Department of Energy/Nevada Field Office
EPA	U.S. Environmental Protection Agency
ETA	Estimated Time of Arrival
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
LLW	Low-Level Waste
NTS	Nevada Test Site
NVO-325	Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements.
PCB	Polychlorinated Biphenyls
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
SEG	Scientific Ecology Group, Inc.
WAC	Nevada Test Site Waste Acceptance Criteria
WCO	Waste Certification Official
WPC	Waste Package Certifier

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PROHIBITED MATERIALS LIST

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Materials

Flammable Materials

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any free liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

Attachment D
Page 1 of 1

SEG WASTE PACKAGING QUALITY CONTROL RECORD STICKER
EXHIBIT

SEG

WASTE PACKAGE QUALITY CONTROL RECORD

WELDS	**INSPECTED BY:**
GASKET	**INSTALLED BY:**
DOSE/ CONTAMINATION	**SURVEY:**
WASTE TRACKING	**APPROVAL:**
FINAL PACKAGE	**INSPECTION:**

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FEMP CERTIFICATION STATEMENT
EXHIBIT

CERTIFICATION STATEMENT

LOW-LEVEL WASTE SHIPMENT FROM FEMP TO NEVADA TEST SITE

Bill of Lading No. _____	Seal Number(s) _____
Trailer No. _____	_____

I certify that the containers in Shipment No. WML _____ as listed on the attached Package Storage & Disposal Data report do not contain hazardous waste as defined in Title 40 CFR 261 or OAC 3745-54 hazardous waste regulations:

(1) according to the results of tests performed in accordance with the requirements as specified in Subpart C of Title 40 CFR 261; and/or

(2) according to the supporting documentation provided to me about the materials and processes that produced the waste.

To the best of my knowledge, I believe the information I have submitted is true, accurate, and complete.

_____
FEMP Waste Certification Official

Date: _____

NV-211 PACKAGING CERTIFICATION STICKER
EXHIBIT

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: WASTE CERTIFICATION OFFICIAL

ORGANIZATIONS: FEMP

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ATTACHMENT G
Page 1 of 1

WASTE PACKAGE SURVEY REPORT
EXHIBIT

BARCODE #	ITEM #	CONTAINER TYPE	FIXED α	DOSE RATE	REMOVABLE CONTAM. α	β/γ

ATTACHMENT H
Page 1 of 1

EXHIBIT

VEHICLE CONDITION CHECKLIST

SHIPMENT NUMBER: _____ SHIPMENT DATE: _____
CARRIER: _____ DRIVER'S NAME: _____
TRACTOR NUMBER: _____ TRAILER NUMBER: _____

TRAILER TYPE: VAN, OPEN TOP VAN, FLATBED, OTHER _____

INSPECTION CHECKLIST
EXHIBIT

INSPECTION CHECKS	SAT	UNSAT
1. Front tire tread: at least 4/32" thread (no recaps)	____	____
2. Other tire tread: at least 3/32" tread	____	____
3. Service brakes: Good Condition and properly attached?	____	____
4. Parking brakes: Operational and on while loading	____	____
5. Steering mechanism: Demonstrated operational	____	____
6. Headlights and front reflectors: Clean and operational	____	____
7. Windshield wipers: Demonstrated operational	____	____
8. Rear vision mirrors:	____	____
9. Horn: Demonstrated operational	____	____
10. Fire extinguishers: Fully charged	____	____
11. Trailer frame and headboard: Free of visual effect defects	____	____
12. Load tiedowns: Adequate number for loads and in good condition	____	____
13. Emergency kit: Extra placards, Rad rope, Pc's	____	____
14. Brake lights: Demonstrated operational	____	____
15. Turn signals: Demonstrated operational	____	____
16. Reflectors: At proper locations on trailer	____	____
17. Spare tire: At least 4/32" thread	____	____

Inspected By: _____ _____
Driver's signature SEG Representative

OP/4.1-4.10

6054

EXHIBIT

DOCUMENTATION OF VERIFICATION
FOR
SHIPMENT OF WASTE STREAM ONL0000000008 FROM FERMCO TO SEG

DATE OF VERIFICATION: _____

SHIPMENT IDENTIFICATION: _____

I have checked to verify there are no open deviations (Deviation Reports) for the packages being shipped.

I have received waste characterization documentation for the identified shipment that is dated and signed by an authorized representative of the Waste Characterization Section of FERMCO to SEG at Oak Ridge, Tennessee.

_____ _____
Waste Package Certifier Date

I have reviewed the shipment package and included characterization data, and determined that is acceptable to support shipment to SEG.

_____ _____
Waste Package Official Date

From NO. QA/QC-930419-1, Rev. 0

APPENDIX III

WASTE CERTIFICATION PROGRAM PLAN

FOR

LOW LEVEL WASTE CHARACTERIZATION AND CERTIFICATION

Appendix III

June, 1993

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

P. O. Box 398704

Cincinnati, Ohio 45239-8704

PURPOSE OF WASTE CERTIFICATION PROGRAM PLAN APPENDIX III

The purpose of this appendix is to describe the plan to be used by the Fernald Environmental Restoration Management Corporation (**FERMCO**) to certify FEMP Waste Stream ONL0000000009 meets all the requirements of NVO-325 (Rev.1) for storage and disposal at the Nevada Test Site (NTS). This FEMP waste, currently exists as scrap metal piles being packaged in boxes for shipment to Scientific Ecology Group, Incorporated (**SEG**) for treatment. The treatment of the scrap metal involves separating the oxides, melting the metal, separating, and cooling the slag. The metal melt waste is the slag, which contains a majority of the contamination, and the initially separated metal oxides. Where practical, the metal melt wastes shall be treated to reduce volume. They are innerpackaged separately, overpacked together at SEG, and shipped to the NTS subject to **FERMCO** certification.

This appendix, in conjunction with the "Waste Certification Program Plan for Low Level Waste Characterization and Certification," Revision 7, June, 1993, shall be followed by **FERMCO** and **SEG** to comply with NVO-325, Rev. 1 requirements.

WASTE CHARACTERIZATION AND CERTIFICATION

Certification of waste identified as Waste Stream ONL0000000009 shall be made on the basis of FERMCO's characterization of the scrap metal, which is based on process knowledge and sampling and analysis performed at the FEMP, and on the basis of SEG's sampling and analysis of the slag and metal oxides. Characterization is described in the FERMCO application to ship low level waste. The application also includes the Waste Certification Program Plan (WCPP).

SEG Quality Assurance (QA) shall be responsible for ensuring that systems and procedures are in place and implemented to provide traceability during transport, receipt, storage, compaction, repackaging, and shipment of this waste.

SEG shall ensure that packages of waste presented for certification by **FERMCO** certifiers comply with NVO-325, Rev. 1 requirements.

Quality Assurance hold points have been established, and are identified in the Waste Certification Hold Point Diagram (Figure 1) for the ONL0000000009 waste stream. Documented inspections and/or verifications shall be performed at each hold point to prevent acceptance of nonconformances.

FERMCO Waste Certification Officials shall certify shipments of waste from **SEG** to the Nevada Test Site. Only shipments of waste meeting DOT (49 CFR), EPA (40 CFR), state of Tennessee, and NVO-325, Rev. 1 requirements shall be shipped.

FERMCO Waste Package Certifiers (WPCs), or Waste Certification Officials (WCOs), shall perform routine inspections and certify waste packages.

The **FERMCO** Chief WCO shall be responsible for defining and ensuring that requirements for certification are implemented.

QUALITY ASSURANCE REQUIREMENTS

1.0 ORGANIZATION

1.1 GENERAL DESCRIPTION

In accordance with contractual requirements, the **Scientific Ecology Group, Inc. (SEG)** will assume responsibility of shipment from the FEMP to their site at Oak Ridge, Tennessee. There, **SEG** will be contractually responsible to meet NVO-325 requirements in the treating (separating oxides, melting, separating the slag, cooling, and any compacting), packaging, and shipment of the FERMCO waste to the Nevada Test Site. SEG organization charts are included as Figures 1 and 2 (included in Appendix II).

There will be no change in the FERMCO organization. Responsibilities will remain unchanged from those listed in the WCPP, Appendix I in the current FEMP Application. The **FERMCO** organization at the FEMP will perform the duties listed in Sections 1.2.1 and 1.2.7 of this appendix. **FERMCO** will establish resident WPC and WCO at SEG to perform verification and certification work. The resident WCP or WCO will perform the **FERMCO** duties listed in Sections 1.2.2 through 1.2.6 of this appendix. These

individuals will certify waste packages and shipments to the Nevada Test Site. FERMCO WCO is ensured independence to withhold certification of any waste not meeting acceptance criteria.

SEG has a well established QA Department that reports directly to the President of SEG. SEG's QA Department is ensured independence, and have no direct involvement in waste processing and shipping activities. The **SEG** quality assurance organization performs audits and surveillances of activities to ensure conformance.

SEG does not have a Quality Control Department. Routine inspections will be performed by peer inspection within the organization responsible for the work.

1.2 ORGANIZATION RESPONSIBILITIES

1.2.1 **SEG's** president is responsible for implementation of all parts of this WCPP applicable to SEG.

1.2.1 **FERMCO** is responsible for characterization and management of the Waste Stream ONL0000000009 at the FEMP.

- Materials Control & Accountability is responsible for maintaining and supplying inventory records for materials to be shipped to SEG.
- Waste Characterization (WC) provides characterization documentation.

1.2.2 **SEG** is responsible for inspecting, loading, and shipping the scrap metal from the FEMP to SEG at Oak Ridge, Tennessee.

- Project Management examines each package to determine suitability for shipment, and checks that each has a related acceptable characterization for shipment.
- Project Management performs radiological surveys, loads the transport vehicles, prepares shipping paperwork, and ships the scrap metal to SEG at Oak Ridge, Tennessee.

1.2.3 **SEG** is responsible for receipt and storage of the scrap metal received from the FEMP.

- Shipping/Receiving checks and accepts each scrap metal shipment arriving at the SEG site.
- The Metal Melt Facility unloads and stages the scrap metal for treatment.

1.2.4 **SEG** is responsible for holding, separating the loose oxides, and melting the scrap metal, and, cooling, compacting (where practical), packaging, storing, and shipping the loose oxide and slag waste to NTS.

- The Metal Melt Facility determines suitability for treatment, separates oxides, defines melting parameters, melts the scrap metal, separates the slag, defines the compaction method, compacts the waste, inspects containers used for packaging, packages, maintains storage, and loads transport vehicles for shipment.

- Data Systems maintains computerized tracking and reporting.

- Shipping/Receiving ships the loaded vehicle to NTS.

- Health Physics takes radiological surveys of waste packages prior to shipment, and surveys the transport vehicle.

- Health Physics calibrates radiological instruments used to make radiological surveys.

1.2.5 **FERMCO** is responsible for quality overview of the metal melt process records, certification of waste packages, and certification of shipments.

- Quality Certification provides overview of SEG activities, verifies certification activities and documentation, and certifies shipment of waste to the Nevada Test Site.

1.2.6 **FERMCO** QA is responsible for conducting QA audits, surveillances, and readiness reviews for FERMCO.

1.2.7 **SEG** QA is responsible for performing QA audits, surveillances, appraisals, and reviews as needed to ensure compliance with responsibilities identified in this WCPP and other applicable plans and procedures.

2.0 QUALITY ASSURANCE PROGRAM

There is no change in the FERMCO QA Program.

SEG's QA Program is described in their QA Plan SEG/QA-100.

3.0 DESIGN CONTROL

The design of the certification program will remain essentially unchanged. However, some change in verification inspections will be made commensurate with work activities at **SEG**.

The waste treatment operation at **SEG** changes the physical form and the relative composition of the waste, and is a design control concern. The separation of the metal oxides from the scrap metal to be melted creates two sub-waste streams.

The loose metal oxide, which was separated from the metal during unloading, is placed in an inner pack container and may not experience

additional treatment. The composition, however, may be different than that of the scrap metal characterized at the FEMP.

The scrap metal, with its loose oxides separated, will be melted. The resulting waste is the slag which was collected while melted and cooled. The slag composition will be different than the scrap metal; consisting of mostly metal oxides and containing a majority of the radioactive contamination.

Both the metal oxide material and the slag material will be characterized separately. The overpack containers shipped to NTS will contain inner packs of both materials. The characterization of the shipped containers will be a weighted composite of the individual characterization of each inner pack container.

Inventory control and material traceability at **SEG** is a design concern. **FERMCO** will audit this prior to start of work to ensure all changes in design impacting the certification program are controlled and approved. Changes having significant negative impact will require changes to this WCPP in accordance with controlled procedures.

Procurement of containers, weighing devices, and radiological equipment by **SEG** will be subject to design control to the extent necessary.

4.0 PROCUREMENT DOCUMENT CONTROL

The only identified routine procurement of significance by **SEG** will be for packaging, which will be used as strong tight containers for the shipment of waste. The **SEG** procedure relating to procurement control is SEG/QA-4.1, "Quality Assurance Procedure Procurement Control."

5.0 INSTRUCTIONS, PROCEDURES, DRAWINGS

SEG will use their procedures for receiving, melting, separating, cooling, compacting, overpacking, tracking, and shipment of low level radioactive waste. These procedures, which are controlled, contain quantitative and qualitative acceptance criteria. A list of **SEG** procedures is included in Table I.

FERMCO procedures will be used in the certification of waste packages and shipments. With the exception of one new certification procedure specifically applicable to certification at **SEG**, there is no change in FERMCO procedures. The new certification procedure is EQP-12.08, "Certification of Compacted Low Level Waste for Shipment from SEG to NTS."

6.0 DOCUMENT CONTROL

SEG will control authorization, preparation, review and approval, distribution, recall, and update of documents important to certification. Updated documents and procedures pertinent to certification will be provided to the WCO.

7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

SEG's procedure for control of purchased items and services is SEG/QA-4.1, "Quality Assurance Procedure Procurement Control."

Purchases of materials, items, or systems important to certification will be controlled by carefully prepared requisitions and purchase orders. Controls will be in place to ensure that items and services meet acceptance requirements prior to use. Any packaging procured will be designated for use as "strong tight." If the packaging is supplied by FERMCO, there will be no requirement that **SEG** conduct vendor or receiving inspections. However, in all instances, documentation of container inspection prior to use will be required (SEG/OP-2.2).

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Waste Stream ONL0000000009 is well defined. It is isolated as a scrap metal pile and stored at the FEMP. This identification directly correlates with waste characterization data retained in the respective waste characterization files.

Upon filling boxes of scrap metal, **SEG** will affix one of their unique barcodes to each box for tracking purposes. The **SEG** barcode provides traceability for each box and is controlled by **SEG** Data System Waste Tracking, Procedure QA-4.3.

SEG will use "strong tight" containers to package the scrap metal. Any new packaging procured by **SEG** will be traceable to the supplier. Verification will be made and documented that these boxes are empty and in acceptable condition prior to reuse. All reused containers will have an affixed barcode number to provide control and traceability.

SEG will receive and store boxes of scrap metal at their site in a manner that eliminates any significant risk of mixing with SEG's, or another customer's waste. Prior to treatment, the box of scrap metal will be emptied on a pad allowing the metal oxides (rust) to fall to the concrete pad. SEG will maintain documentation that the pad is clean prior to dumping any FEMP waste. The metal is temporarily stored in a bin or immediately moved to the furnace for melting. The loose oxides are collected in an innerpack box. The old barcode on the box of scrap metal will be removed or obliterated.

The oxides will be placed in an innerpack container. This box of waste will receive a new unique barcode and be placed into an overpack box. The barcode will allow the oxide material to be traced to the FEMP scrap metal. The slag will be collected into containers, allowed to cool, and compacted (where practical). These containers will be packed along with the boxes of oxides for shipment to the NTS.

SEG will be packaging the slag waste and oxide boxes (may be compacted) into standard 4x4x7 foot metal boxes procured by **SEG** under their procurement system. (The boxes will comply with NVO-325 requirements.) These boxes will also be assigned a unique barcode number for tracking.

SEG will compact the slag (where practical) in the containment box with the barcode affixed. Their experience is that the bar code remains affixed during compaction, and is fully readable for packaging identity after compaction.

SEG will maintain records of packaging activity that identify the contents of each waste package. Barcode information from the multiple compacted boxes will be linked to the barcode on the waste package.

SEG will supply FERMCO WPCs and WCOs copies of all records documenting control and traceability.

FERMCO will maintain the certification files. Any records pertaining exclusively to individual packages or a shipment will become part of the respective shipment certification file. Other records of a more general nature will become part of the certification file maintained for the project.

A **FERMCO** WCO or WPC will verify cleaning of the compactor unit prior to compaction of any FERMCO waste.

FERMCO will implement and maintain a Chain-of-Custody policy for samples of metal oxides and slag samples.

9.0 CONTROL OF PROCESSES

The processes for transport of Waste Stream ONL0000000009 to SEG, and receipt, treatment, packaging, and shipment to NTS will all be controlled by **SEG** procedures listed in Table I. Procedures and/or technical manuals will be used to control processes such as testing and calibration of radiological instruments and scales. Sampling and analysis is anticipated.

A Waste Certification Hold Point Diagram (Figure 1), with illustration of the process flow, is included in this application to ship Waste Stream ONL0000000009.

The process for certification of waste will remain essentially unchanged except for customizing checklists to **SEG** operations and using **SEG** records for certification in lieu of the **FERMCO** Item Production / Certification / Identification (W-65 card). Hold Point controls have been established as shown on the Certification Hold Point Diagram in Figure 1 of this appendix. Certification and process controls identified with respective hold points and controlling procedures are as follows:

(1) Hold Point Quality SEG QS1 - SEG/OP-4.2

SEG shall verify that characterization data are in order for the shipment of waste to **SEG**. Packages are inspected to determine acceptability for taking custody and shipping to **SEG**.

(2) Hold Point QS2 - SEG/OP-4.2

SEG shall measure the radioactivity levels of the containers upon receipt. **SEG** shall not store or process packages exceeding radiological control limits without administrative controls, or other acceptable means, to eliminate the increased risk to personnel.

(3) Hold Point QS3 - SEG/OP-2.2 and SEG/OP-4.3

SEG shall perform receiving inspections for any new packaging used.

(4) Hold Point QF5 - FEMP/EQP-12.08

FERMCO WCO shall review and approve the "Package Storage & Disposal Data" report. Approval shall require validation, and verification, that data presented meets waste acceptance requirements. The characterization for the individual inner pack boxes contained in the shipment box will meet all requirements.

(5) Hold Point QF6 - FEMP/EQP-12.08

FERMCO WPC or WCO shall:

- Verify that the TID affixed by a WPC or WCO is still on the package.
- Verify contents of each waste package is traceable to an acceptable waste characterization.
- Inspect waste packages to ensure physical condition, markings, and labeling meet Title 49 CFR 172 Subparts D and E [with exceptions noted in Title 173.425 (b) and (c)], and NVO-325, Rev. 1 requirements.
- Verify that each package is listed on an applicable Package Storage & Disposal Data Report signed by a WCO, and that all information on the package agrees with the PSDD report and associated documentation.
- Verify appropriate disposition of all nonconformances impacting the waste package being certified.
- Verify the NV-211 label, and affirm that it is signed and dated prior to applying it to the respective package.
- Affix a signed and dated NV-211 sticker on each acceptable package.

(6) Hold Point QS4 - SEG/OP-4.4Q

For each incoming transport vehicle to be used to transport waste to NTS, **SEG** shall:

- Make a visual inspection of the transport van.
- Make radiological checks.

000245

(7) Hold Point QS5 - SEG/OP-4.4Q

SEG shall:

- Perform a visual inspection of each outgoing shipment.
- Perform radiological checks of the transport vehicle to verify compliance with 49 CFR 173.411, 173.421, and 173.425 requirements.

(8) Hold Point QF7 - FEMP/EQP-12.08

FERMCO WPC or WCO shall:

- Verify that an NV-211 sticker dated and signed by an authorized **FERMCO** WPC or WCO is securely affixed to each accepted waste package.
- Verify that **SEG** has inspected the trailer.
- Verify that **SEG**'s radiological checks on the transport van have been made and are within acceptable limits.
- Verify that waste packages loaded for shipment are those listed on the respective "Package Storage & Disposal Data" report, which is signed by an authorized FERMCO WCO.

(9) Hold Point QF8 - FEMP/EQP-12.08

FERMCO WCO or WPC shall witness an operability check, and either conduct or witness a limited road worthiness check of each vehicle transporting FERMCO waste to NTS.

(10) Hold Point QF9 - FEMP/EQP-12.08

FERMCO WCO shall:

- Review sampling and analysis results of each container and verify that the materials described have been characterized as acceptable for shipment, and that all nonconformances affecting waste certification have been closed.
- Examine all shipment paperwork for completeness and accuracy.
- Verify that all required certification checks have been completed.
- Verify that all authorizations are complete and valid, and that the certification file is complete.
- Complete and sign a certification statement as required by NVO-325, Rev. 1.
- Verify that SEG's "Radioactive Material Shipment Release Checklist" has been completed to the extent applicable.

- Verify that the Bill of Lading, manifest and/or tally sheet, "Package Storage & Disposal Data" report, and the FERMCO certification statement are sent with each shipment, and that driver's instructions have been give to the driver.

Post shipment requirement - FEMP/EQP-12.08

FERMCO WCO shall ensure that copies of the Certification and the "Package Storage & Disposal Data" report are faxed within 24 working hours to DOE/NV, and Reynolds Electrical & Engineering Company, Inc., at Area 5. Failure to communicate due to faulty communication equipment at the sending or receiving site shall not be cause for a nonconformance.

General requirement

The **FERMCO** WCO at **SEG**, and Quality Certification at the **FEMP** shall maintain certification files in accordance with requirements outlined in this WCPP, and this appendix to the plan.

10.0 INSPECTION

Inspections made by **FERMCO** will be performed by persons other than those performing or supervising work. However, due to their benign nature, inspections currently identified to be performed by **SEG** will not necessarily conform to this requirement.

Inspection hold points have been identified in the Waste Certification Hold Point Diagram. For the purpose of certification, completion and signing of a properly identified checklist or inspection report by an authorized person constitutes an inspection. Key inspections identified in NVO-325, Rev. 1 are addressed as follows:

- **SEG** shall inspect waste containers prior to use (SEG/OP-2.2).

- Verification and certification of the contents of each container shall be based on the waste characterization performed at the FEMP and traceability to the waste packaged. **FERMCO** inspection of packaging operations shall initially be conducted an average of no less than twice during each shift of operation. The frequency may be reduced to an average of no less than once each shift of operation if the FERMCO Chief WCO does not detect any ongoing significant problems based on informal reviews. Inspections shall be performed by WPCs and/or WCOs.

- **SEG** shall inspect the final packages prior to submittal for certification. A WPC, or WCO, shall inspect each package prior to certification.

- A **FERMCO** WCO shall inspect each shipment and associated paperwork.

11.0 TEST CONTROLS

Tests affecting certification are not anticipated. However, should testing be required, controls will be implemented that conform to NVO-325, Rev. 1 requirements.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

FERMCO will ensure that the analytical laboratory's QA Program Plan and QA Project Plan provides adequate instrument calibration procedures. Periodic audits of the laboratory will be performed.

SEG measuring and test equipment will be controlled in accordance with NVO-325, Rev. 1 requirements and the WCPP. Examples of measuring and test equipment to be controlled are radiation measuring equipment and weighing devices.

Each instrument will have a unique identification for calibration control.

Records of calibration will be maintained, and systems will be in place to ensure timely recall of instruments requiring re-calibration.

SEG test equipment and measuring devices will be tagged or labeled to indicate they are calibrated or certified for continued use. Out of calibration devices will be tagged out-of-service and segregated. If segregation is not practicable, out-of-service tags will be prominently displayed or a security system will be employed to prevent inadvertent use.

NOTE: The labeling or tagging of torque wrenches may be impractical due to size and condition of use.

Calibration performed by **SEG** is confined to the radiological instruments calibration laboratory. Temperature and humidity will be measured and controlled as necessary for calibration. Calibration of weighing devices is contracted through SEG procurement.

13.0 HANDLING STORAGE AND SHIPPING

SEG shall handle, store and ship waste in a manner that will not affect the certification status. **FERMCO** WPCs shall apply TID to each package, and packages shall be sheltered or otherwise protected prior to shipment. All handling and storage will comply with ALARA concepts.

SEG transporter (driver) will be provided additional tamper indicating devices (seals) for trailers.

All seal numbers will be recorded on the shipping paperwork. The driver will initial and date a record of seals removed and installed during each load inspection made in route. Broken seals will be kept and presented with the shipping papers upon arrival at the NTS.

SEG will seal vans used in shipment with a numbered tamper indicating device, and will control the shipment by routing.

14.0 INSPECTION, TEST, AND OPERATIONAL STATUS

Items rejected by **SEG** for use will either be tagged or clearly marked unsuitable for use (e.g., for rework, reject, etc.). **FERMCO** checklists will be designed to verify documentation of satisfactory completion of any required preceding inspections. Nonconforming items identified by **FERMCO** will be tagged as nonconforming using tags exhibited in the WCPP. NV-211 stickers will be used to control certification and loading of packages for shipment.

15.0 CONTROL OF NONCONFORMING ITEMS

SEG Procedure SEG/QA-15.1 will be followed in controlling nonconformances identified by **SEG** personnel. Copies of these nonconformances and resolutions shall be provided to the WCO, who will disseminate the information to WPCs. Nonconformances identified by **FERMCO** personnel will be controlled in accordance with the WCPP and the applicable **FERMCO** procedure.

Nonconformances of lesser consequence will not require issuance of a nonconformance report if the nonconforming condition is corrected within a short period. However, should the nonconforming item(s) be left unattended, nonconformance tags will be applied. Records of all nonconformances will be compiled for tracking and corrective action purposes.

Nonconformances will be evaluated to determine root causes and determine the need for corrective action. Requests for corrective action and responses thereto will be documented on a corrective action report as required by the controlling documents in Section 16.0 of this appendix.

16.0 CORRECTIVE ACTIONS

SEG Procedure SEG/QA-15.1 will be followed in identifying, developing, and implementing corrective actions for nonconformances identified by **SEG** personnel. The root cause evaluation performed in Section 15.0 of this appendix is included in the corrective action report. Copies of the corrective action reports will be provided to the WCO, who will evaluate impact upon the certification program. Negative impact will require interface between **SEG** and **FERMCO** to achieve resolution.

Corrective actions identified as a result of nonconformances identified by **FERMCO** personnel will be controlled in accordance with the WCPP and the applicable FERMCO procedure (SSOP-0023) listed in Appendix I, Table I of the current application.

17.0 QUALITY ASSURANCE RECORDS

Minimum requirements for defining and maintaining QA records are defined in NVO-325, Rev. 1. QA records generated at SEG pertinent to the certification of Waste Stream ONL00000000009 at **SEG** will, while at that site, be maintained by the WCO. **SEG** will maintain originals of all records generated by their personnel. Records will be legible, identifiable, and retrievable. All QA records, to be valid, must be signed and dated. Mistakes or corrections in records will have a single line drawn through the changed data and shall be signed or initialed and dated.

FERMCO will provide **SEG** copies of all audits and surveillances, nonconformance reports, approved "Package Storage & Disposal Data" reports, and signed certification statements.

After making copies, the **FERMCO** WCO at SEG will forward all certification records to the FEMP for storage. The forwarded records will be stored at the FEMP initially in a fire resistant safe, or in standard metal file cabinets located in an area protected with an automatic sprinkler system. For permanent storage, the records will be transferred to the FEMP storage repository, or a contracted repository having an approved fire protection system. Copies of certification files retained by the WCO at SEG will be retained by the WCO at SEG for the duration of the project.

18.0 AUDITS/SURVEILLANCES

SEG has an audit and surveillance program, and conducts scheduled audits and surveillances of their operations. Information copies of SEG audits and surveillances impacting waste certification will be distributed to the **FERMCO** Chief WCO. The **FERMCO** WCO and **SEG** auditors will review the surveillance check list results and identify Conditions Adverse to Quality needing corrective action.

FERMCO Independent Program Assessment and Oversight will conduct a readiness audit prior to any certification and shipment of waste from the **SEG** site. **FERMCO** audits are conducted in accordance with the WCPP and applicable **FERMCO** procedures. With the presence of resident **FERMCO** certifiers at **SEG**, further audit and formal surveillance is optional up to one year from the current audit date.

19.0 TRAINING

All **SEG** and **FERMCO** personnel associated with waste management and the certification program will be trained on the requirements of the WCPP and NVO-325, Rev. 1. All persons who generate, package, certify, prepare data, perform related radiation surveys, or perform the associated quality functions will receive training in the requirements and implementing procedures for those parts of the certification program in which they are involved.

Initial training to requirements of the WCPP and NVO-325, Rev. 1 will be given to eligible **SEG** personnel by a **FERMCO** technical instructor utilizing the **FERMCO** training program. The presenter of future training is optional, but the training program in any case will meet NVO-325, Rev. 1 requirements.

Similar to Ohio, Tennessee has adopted the Federal program for implementing RCRA. The Tennessee regulations for hazardous waste identification are promulgated under Tennessee Hazardous Waste Management Rules 1200-1-11. WCOs and WPCs will receive, as a minimum, informal instruction on applicable state of Tennessee regulations for shipment of low level waste.

All training will be effective for the lesser of a period of two years or until major change.

SEG auditors will have training commensurate with the scope, complexity, or special nature of activities to be audited. Auditors are given training and orientation on the requirements of 10 CFR 50, Appendix B and NQA-1 licensing fundamentals.

FERMCO auditors are trained and qualified in accordance with FERMCO Procedure EQP-6.07, "Certification of Quality Assurance Audit Personnel."

Records of training course content, exams, and test results will be maintained as QA records, and shall be available for review by audit personnel.

FERMCO will maintain, at the FEMP, all records of training presented by **FERMCO**, which includes NVO-325, Rev. 1 WCPP training given to **SEG** personnel.

SEG document control will maintain records of **SEG**'s training, which includes training on procedures.

TABLE I

MASTER PLANS, MANUALS, AND PROCEDURES

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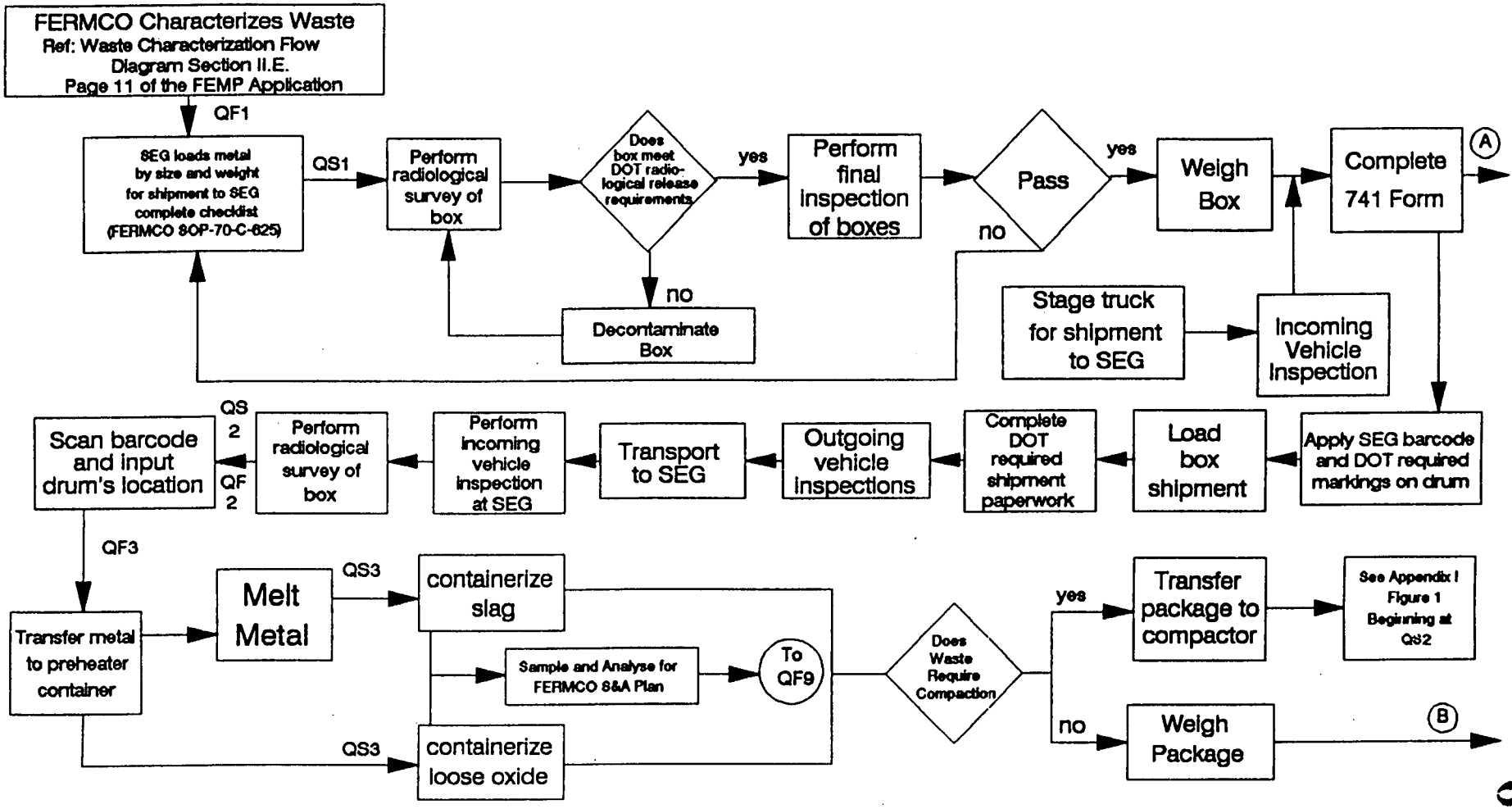
OP-2.2		Overpacking System
OP-2.8		Press (Supercompactor) Operation
OP-4.2		Radioactive Material Receipt
OP-4.3		Data Systems Waste Tracking
OP-4.4Q		Radioactive Material Shipment
SEG/QA-4.1		Quality Assurance Procedure Procurement Control
SEG/QA-7.2		Approved Supplier List
QA-10.1		Inspection
SEG/QA-15.1		Nonconformance Reporting
SEG/QA-100 Revision 3		Quality Assurance Program
STD-P-17-700	*	FERMCO Material Processing Procedure

FERMCO PROCEDURES

EQP-12.08	Certification of Compacted Low Level Waste for Shipment from SEG to NTS
EQP-6.07	Certification of Quality Assurance Audit Personnel

* This procedure is attached - all others are provided in Appendix II.



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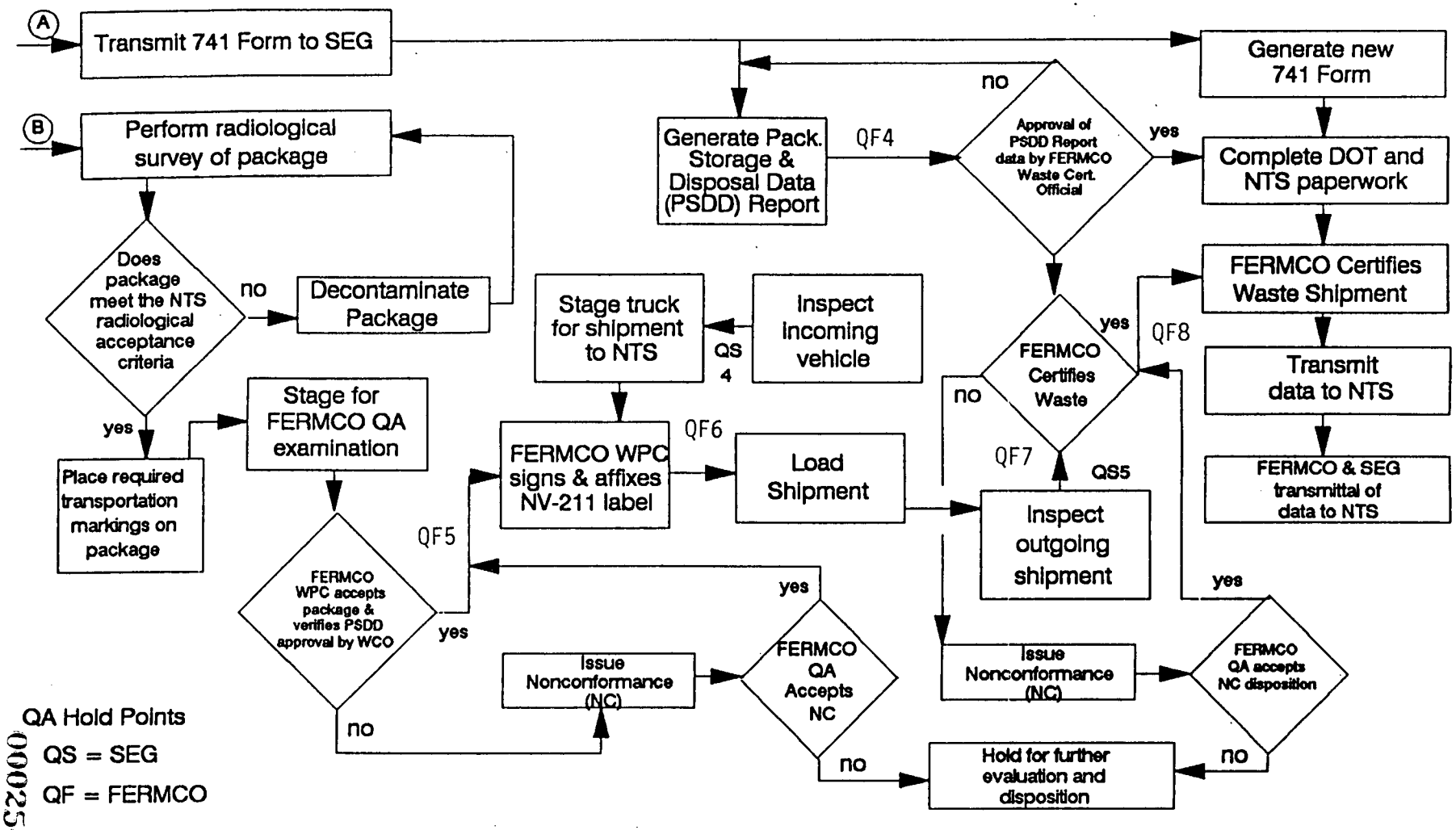

Figure 2
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APPENDIX IV

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WASTE CERTIFICATION PROGRAM PLAN

FOR

LOW LEVEL WASTE CHARACTERIZATION AND CERTIFICATION

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

P. O. Box 398704

Cincinnati, Ohio 45239-8704

Revision 7 06-10-93

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RECORD OF REVISIONS

REVISION NO.	DATE
0	10/1/87
1	9/19/88
2	1/24/89
3	4/06/89
4	6/28/89
5	6/30/90
6	11/20/92
7	6/10/93

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PURPOSE OF PLAN

This Waste Certification Program Plan (WCPP) describes the procedures that are used by the Fernald Environmental Management Project (FEMP), Fernald, Ohio, to ensure that the low level waste (LLW) shipped to the Nevada Test Site (NTS) for disposal conforms with all pertinent federal, state and local regulations, and NTS acceptance criteria. The FEMP is managed by Fernald Environmental Restoration Management Corporation (FERMCO) for the U. S. Department of Energy (DOE). The FEMP, previously designated as the Feed Materials Production Center (FMPC), served an important role in DOE defense programs by employing a variety of chemical and metallurgical processes. Although the site is no longer in the production mode, remediation and environmental restoration by FERMCO requires management and disposal of LLW associated with prior defense programs.

The production processes at the FEMP generated solid and liquid low level radioactive wastes. The primary waste forms to be packaged and shipped are waste process residues, scrap wood and wood pallets, refuse metal, miscellaneous trash, thorium waste, and construction/removal action wastes. The uranium content of the uranium waste streams range from about 0.1% to 88%. The ^{235}U isotopic content normally is 0.2% to 2.0%. The specific activity content of the wastes allows it to be classified as Limited Quantity (LQ), or as Low Specific Activity (LSA), subject to exclusive use vehicle shipment regulations.

This WCPP is based primarily on the Waste Acceptance Criteria (WAC) established by NTS NVO-325, and on the American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) NQA-1 Quality Assurance Program (QAP) and its supplements, which is applicable to nuclear facilities. In addition, adherence to the QAP ensures compliance with applicable U. S. Department of Transportation (DOT), U. S. Nuclear Regulatory Commission (NRC), U. S. Environmental Protection Agency (EPA), State Environmental Protection Agency and DOE regulations and orders. This WCPP document presents a brief description of operations, waste generation, and applicable standards, regulations, and guidelines, and the QA measures concerning each of the 18 NQA-1 elements.

This WCPP defines key responsibilities for quality assurance and waste certification. Specific responsibilities are defined for WCOs and WPCs who certify the waste for shipment.

Flow diagrams and brief descriptions of organizational functions pertaining to waste certification are provided to identify each organization's involvement in the certification process, and to show how each interfaces with the other.

WASTE CERTIFICATION PROGRAM PLAN

1.0 ORGANIZATION

1.1 FEMP Management Organization

The Fernald Environmental Management Project (FEMP) is managed by FERMCO under contract to DOE. An overall FERMCO organizational chart appears in Figure 1. All internal organizations that generate waste are responsible for having their waste characterized and handling it accordingly. The characterization, packaging, certification, and shipment of LLW at the FEMP involves numerous organizations.

1.1.1 Remediation Support Operation Division/Materials Management Department/ Waste Storage & Disposition Section [Low Level Waste Program]

Remediation Support Operation (RSO) Division/Materials Management (MM) Department/Waste Storage & Disposition (WS&D) [Low Level Waste Program] Section manages the waste management functions. Remediation Support Operation (RSO) Division has the responsibility of defining the management systems used to assure the quality of the desired results for waste certification activities. This organization is responsible for establishing sufficient quality control hold points and verifying satisfactory performance of the Quality Certification Program. Specifically, quality control hold points shall be monitored by the RSO Division [Low Level Waste Program] management staff to assure program quality is accomplished. The staff shall also evaluate results of program reviews, surveys, surveillances, and audits to determine satisfactory progress of certification activity. However, the performance of these activities may be accomplished by other qualified organizations.

1.1.2 On-site Waste Generators (All Organizations)

On-site waste generators have the responsibility of ensuring that personnel performing work under their direction have been trained in accordance with on-site waste generators are responsible for identifying and describing their waste for characterization, and are required to initiate a Material Evaluation Form (MEF) and submit it, along with supporting information, to Environmental Safety & Health (ES&H) Division/Environmental Protection Department/Waste Characterization (WC) Section [Facilities and Materials Evaluation (FME)]. An exception to this is construction projects, where an information package without an MEF is developed for each project and submitted to WC [FME] for characterization. For construction projects, waste characterization is documented with a RCRA Characterization/Radiological Determination (RC/RD) letter or a completed MEF. Some MEFs authorize characterization by generator using a prescribed check list.

The waste characterization flow diagram (Figure 1 in the application) reflects the process whereby construction project wastes are characterized. All waste streams generated at the FEMP will be assigned an MEF number and reviewed in accordance with the MEF worksheets.

Once the waste is characterized and determined to be LLW, the waste generator initiates an Item Production/Certification/Identification Card (W65-card) for each waste package generated, which is traceable to the container either by the container serial number, or the FEMP lot number and assigned container number in combination (If the waste was packaged prior to characterization, Nuclear Materials Control records may be used in lieu of the W65-card). The waste generator is responsible for communicating the ongoing status of packaging operations to QA to ensure that all necessary Quality Control (QC) examinations can be performed and documented in a timely manner.

1.1.3 Environmental Safety & Health Division/Environmental Protection Department/Waste Characterization Section [FME]

The ES&H Division/Environmental Protection Department/Waste Characterization (WC) [FME] Section has responsibility for characterization. The FEMP's Waste Characterization Program has been developed and refined over several years as the facility has worked to characterize its inventory of backlogged (primarily process residues) and newly generated waste. Additional responsibilities include documenting the evaluation process, maintaining the characterization files, and distributing results of the evaluation.

1.1.4 Acquisitions and Finance Division/Materials Control & Accountability Department

Acquisitions and Finance Division/Materials Control & Accountability (MC&A) Department is responsible for documenting the transfer of the nuclear material constituents of the low level waste. MC&A completes the Shipping Order for the Nuclear Material (FS-F-558-3) which authorizes each shipment. They also perform other nuclear material accountability functions, including preparation, approval and transmission of the Nuclear Material Transaction Report (DOE-741).

MC&A is responsible for nuclear materials measurement control at the FEMP, which includes weighing, sampling, and analysis. When materials are not amenable to sampling, process measurements are evaluated by MC&A to produce factor assays that are used to quantify nuclear materials in each shipment. They also are responsible for generating barcode labels and tracking nuclear materials, which provides accountability and traceability of LLW. The FEMP Lot Marking and Color Coding System is defined in Site Document RM-0005.

1.1.5 Remediation Support Operation Division/Materials Management Department/ Logistics Administration & Inventory Control & Warehousing Section [Traffic]

RSO Division/MM Department/Logistics Administration & Inventory Control & Warehousing Section [Traffic] contracts with carriers for services that meet DOE and DOT requirements for transportation. This organization schedules transportation, overviews supporting documentation for conformance to DOT requirements, and prepares and signs the Bill of Lading authorizing shipment. Information on each shipment, including estimated time of arrival, is communicated to NTS and updated as necessary. Logistics Administration & Inventory Control & Warehousing Section [Logistics Administration] exercises review approval of all packaging, loading configuration, shoring, and securing of materials in each shipment.

1.1.6 Remediation Support Operation Division/Remediation Support Operation Operations Department/Facilities & Waste Operations Section [Transportation and Support Services]

RSO Division/RSO Operations Department/Facilities & Waste Operations Section [Transportation and Support Services] is responsible for loading shipments in accordance with approved procedures. Included in this action is inspection of each trailer for leaks, holes, adverse deterioration, or improper sealing. (See Figure 12)

1.1.7 Remediation Support Operation Division/Facility Engineering & Maintenance Department/Maintenance Services Section [Maintenance Garage]

The RSO Division/Facility Engineering & Maintenance/Department/ Maintenance Services Section [Maintenance Garage] is responsible for performing a limited mechanical inspection of all trailers received at the FEMP and designated for shipment of LLW. Results of these inspections are documented on FS-F-3344 (Figure 13).

1.1.8 Remediation Support Operation Division/Materials Management Department/ Waste Storage & Disposition Section [Waste Shipping]

WS&D is a Section of MM Department within RSO Division [Waste Shipping]. RSO Division [Waste Shipping], is also a significant waste generator and is responsible for final preparation of packages for shipment. Responsibilities include examination, final closure, weighing, labeling, marking, touch-up painting, and staging of shipments for loading.

1.1.9 Remediation Support Operation Division/Materials Management Department/ Waste Storage & Disposition Section - Waste Shipping Coordinator

The Waste Shipping Coordinator generates the initial paperwork for each shipment that is submitted to Quality Certification for approval. The shipment paperwork package contains the Reynolds Electrical & Engineering Company, Inc. (REECo) Package Storage and Disposal Data Form and other information supporting shipment. Once a shipment is prepared, this individual, or delegate, is responsible for the electronic data transmission to the Low Level Waste Information System, as required by REECo Document DM-5.13.

1.1.10 Administration Division/Training Department [Centralized Training]

Training Department [Centralized Training] is a service organization that reports to the Vice President of Administration Division [Industrial, Radiological Safety and Training]. The overall purpose of the section is to assure needed training is identified, developed, implemented, and administered effectively and in accordance with applicable requirements. The Training Department [Centralized Training Section] maintains training records for the FEMP.

1.1.11 Remediation Support Operation Division/Analytical Laboratory Services Department [Analytical Laboratories]

RSO Division/Analytical Laboratory Services Department [Analytical Laboratories] performs six thousand radiochemical, inorganic, and organic analyses per month to support CERCLA, RCRA, environmental monitoring, groundwater, utilities, and technology demonstration programs. Further, the Department supports all quality control elements for on-site laboratories, off-site subcontractor laboratories, and sample programs including data verification, data package assembly, and laboratory performance evaluation. This department develops and implements procedures to comply with all applicable environmental, health and safety, and quality assurance requirements.

1.1.12 Environmental Safety & Health Division/Environmental Protection Department/Environmental Monitoring & Surveillance Section [Environmental Monitoring]

ES&H Division/Environmental Protection Department/Environmental Monitoring & Surveillance Section [Environmental Monitoring] prepares sampling and analysis plans used in the characterization of low level waste. Environmental Monitoring & Surveillance Section reviews analytical data, perform statistical summary reports, and forwards the results to WC [FME].

1.1.13 Environmental Safety and Health Division/Radiological Control Department [Radiological Safety]

ES&H Division/Radiological Control Department [Radiological Safety] performs radiological surveys of all packages and vehicles involved in the transportation of LLW. It also maintains an instrumentation laboratory for the maintenance and calibration of instruments used to perform these surveys.

The Radiological Compliance Section ensures that radioactive material shipments comply with applicable safety procedures, site procedures, DOT regulations and the DOE Radiological Control Manual through periodic assessments of packaging and transportation activities.

1.1.14 Quality Assurance [Self-Assessment and Continuous Improvement Processes and Quality Assurance Department]

The QA Division, reporting directly to the Office of the President, is comprised of three departments.

The Quality Systems Department is responsible for developing and maintaining the site QAP and administration of the QA Division.

The Independent Program Assessment & Oversight Department [Environmental Quality Assurance] is responsible for performing FERMCO's independent oversight of QA Program activities. The department is composed of two sections. The first, Audits & Appraisals Section performs in-depth QA audits and ES&H appraisals required by DOE 5700.6C and 5482.1B. The other, Environmental Assurance Section is focused on providing up-front quality engineering involvement in planning and review activities, performing field surveillance activities, and providing independent corrective action verifications. This department is heavily involved in the procurement process, which includes qualifying contract laboratories.

The Quality Certification Department certifies waste shipments and provides overview of the Waste Certification Program. This organization is responsible for developing and formally implementing the certification program and ensuring compliance with disposal site criteria. Activities are witnessed, documentation examined, and files maintained to support the certification and release of waste materials. The Quality Certification Department Manager is also the Chief Waste Certification Official.

The RSO Division/Quality Control Department is divided into four sections.

The Procurement Quality Control Section has responsibility for all routine inspections of procured items and services, including inspection at suppliers.

The Remediation/NDE Quality Control Section performs Real Time Radioscopy examination of selected packages. Functions include verifying that no identifiable prohibited materials are packaged, and that space is utilized for waste minimization.

The Waste Verification Section witnesses filling of containers; verifies traceability; inspects packaging, marking, and labeling; and verifies loading and shipping operations. This section is directly responsible for the Waste Package Certifies who certify packages of waste for the NTS.

The Quality Control Operations Section provides quality control services for the Laboratory Qualification Program. Other functions performed by this section are not applicable to this WCPP.

1.2 Waste Certification Organization Independence

The Chief Waste Certification Official (CWCO) is the Manager of the Quality Certification, a department within the QA Division. The QA Division organization chart specifically notes that the "Chief Waste Certification Official has full access to the Office of the President to resolve certification issues." In addition, the QA Manager reports directly to the Office of the President.

Alternate Waste Certification Officials (WCO's) report to the CWCO. Those individuals are entitled to documented direction from the CWCO in the resolution of issues. As members of the QA Division, these individuals have certain other rights of independence as guaranteed by the Quality Assurance Program Description, RM-0012.

Waste Package Certifiers (WPC's) are members of the Quality Control Department/RSO Division. In the performance of their duties, these individuals report to the Manager of the Waste Verification Section. Although there is no direct organization link, these individuals have unrestricted access to the CWCO to address certification concerns. Also, the CWCO has overview responsibility over the WPC's training and work activities, which ensures independent support of the certification program.

1.3 Specific Waste Certification Program Responsibilities

1.3.1 The President of FERMCO retains the authority and responsibility for the overall QA Program of FERMCO.

1.3.2 The Manager of QA has delegated authority for establishing, administering, and evaluating the effectiveness of the QA Program.

1.3.3 RSO Division/MM Department/WS&D Section [Low Level Waste Program] Manager shall define a management system to be used to assure the quality of the desired results for waste certification activities. The RSO/MM/WS&D [Low Level Waste Program] Staff shall:

- Ensure sufficient quality control hold points are established.
- Monitor quality control hold points to assure that program quality has satisfactorily been accomplished.
- Ensure sufficient program reviews, surveys, surveillances, and audits are conducted to ensure satisfactory progress of waste certification activities.

1.3.4 The CWCO, who is the Manager of Quality Certification Department in the QA [SA,CIP&QA] Division. The CWCO has the responsibility to:

- Sign the FERMCO application signature page certifying that the information is correct and that the waste stream(s) will meet the NTS WAC upon implementation of the certification program.
- Ensure certification procedures are prepared and used for waste certification activities.
- Ensure the performance of internal audits, inspections, and surveillances.
- Ensure timely identification of deficiencies and effective corrective action.
- Be responsible for ensuring that alternate WCOs and WPCs are properly trained and qualified to the requirements of NTS Defense WAC and Certification requirements (NVO-325).

The Waste Package Certifiers (WPC's) which are in the Quality Control Department and are listed in the Application, report to the Manager of Waste Verification. The WPC has the responsibility to:

- Verify and document compliance with NVO-325 waste acceptance requirements.
- As a prerequisite for certification, overview all pertinent documentation and activities as required by procedure to ensure completeness and accuracy, including work of Waste Package Certifiers.
- Sign the Waste Package Disposal Data Report.
- Sign and affix NV-211 stickers to packages of waste they have personally examined for shipment to the NTS.
- Sign applicable shipping documents such as the Nuclear Materials Shipping Order to acknowledge QA release of each individual waste shipment.
- Sign the LLW certification statement for each shipment.

The alternate Waste Certification Officials (WCO's) listed in the Application report directly to the CWCO in the performance of their certification duties. The WCO has the responsibility to:

- Verify and document compliance with NVO-325 waste acceptance requirements.
- Sign and affix NV-211 stickers to packages of waste personally examined for shipment to the NTS.

1.4 Waste Process and Certification Interface Description

1.4.1 Responsibility for specific operations for LLW generation rests primarily with WC Section [Facilities & Materials Evaluation], Analytical Laboratory Services Section [Analytical Laboratories], Radiological Control Department [Radiological Safety], Materials Control & Accountability Department, Quality Assurance Division, Logistics Administration & Inventory Control & Warehousing Section [Traffic], and Waste Storage & Disposition Section [Low Level Waste Program], [Waste Shipping], [Shipping & Support Services], Figure 2 shows the waste processing interface, and Figure 3 shows waste certification process.

1.4.2 Once a material, or a group of materials, is declared a waste, the waste is characterized for either storage or disposal. If the waste is characterized as low level defense waste, and sufficient funding is available, RSO Division [Low Level Waste Program] may apply to the NTS for approval to ship the waste for burial. The request is prepared in accordance with NVO-325 requirements, with a specified list of approvals required. It is the responsibility of FERMCO RSO Division [Low Level Waste Program] to assure that the latest waste acceptance requirements are available from DOE/NV and properly distributed to ensure effective compliance.

1.4.3 Only after approval of the application to ship a waste is received from DOE/NV will shipment be made. It is the responsibility of RSO Division [Low Level Waste Program] to provide written notification of approval of any new waste stream, or changes in approval status, to the affected organizations involved in the shipment of LLW.

1.4.4 At the FEMP, a waste generator initiates the waste disposal process by submitting a request to characterize the waste, or by determining that a characterization of the waste has already been made. This is done to verify that the waste is truly a LLW suitable for disposal at NTS. The process for obtaining waste characterization is contained in Site Procedure SSOP-0002.

1.4.5 The waste characterization process is described in detail in Section II of the application to ship waste to NTS. Basic requirements of the program are that waste characterization shall demonstrate compliance with Title 40 Code of Federal Regulations (CFR) 261 through 268, and provide information required by DOE Order 5820.2a. The FEMP waste characterization will also address other waste disposal characteristics specified by NVO-325. Characterization shall be made by process knowledge, and/or through sampling and testing. The results of the characterization shall be supplied to effected organizations and shall specify any administrative controls required to ensure compliance. Administrative controls may typically be special QA verification requirements, specific packaging requirements, or special segregation requirements.

1.4.6 Once the waste generator receives written notification from the WC [FME] Section that a waste is characterized as LLW, and complies with the general waste form criteria specified by NVO-325, the waste is packaged in containers approved by RSO Division [Low Level Waste Program] and accepted by the FEMP Acquisitions & Fiance process. For some wastes, characterization may be completed by the generator using specified check lists (SOP 20-C-625).

All void space in containers is used within practical limits, contingent upon weight restrictions. Waste minimization is further achieved in loading to the extent practical through strategic arrangement, and by utilizing properly sized containers.

During filling, the waste generator complies with requirements of a prohibited materials list either attached to the container or maintained in close proximity to the packaging operation. Also, the waste generator shall abide by any administrative controls that are specified in the results of characterization received from WC [FME]. When required by procedure, all waste containers are sealed and/or locked to maintain integrity. All packages are closed and temporarily fastened and/or sealed prior to transfer to the Waste Shipping Area.

The waste generator, or a cognizant official representative, completes the multiple copy Item Production/Certification/Identification Card for each container (package). If waste is already packaged prior to characterization, it may not be necessary to generate an Item Production/Certification Card, provided nuclear materials control inventory records are available that identify the material with the characterization documentation. The card and other information from packaging is processed by MC&A in the transfer of the container to WS&D Section [Waste Shipping].

1.4.7 In accordance with procedure, Quality Control Department/Waste Packaging Verification Subsection personnel inspect empty containers to verify container integrity, verify container preparation for filling, and witness packaging operations to ensure integrity of the waste being packaged. Documentation will be made with the use of surveillance reports, inspection reports, or checklists.

1.4.8 At the waste generator's request, MC&A personnel arrange for RSO Operations [Shipping and Support Services] to move waste packages to a shipment staging area. WS&D [Waste Shipping] receives the waste and prepares the packages for shipment. In some instances (e.g., sea/land type cargo containers), the sealing and final closure may be performed by WS&D [Waste Shipping] at the generation site.

1.4.9 Unless excluded by management directive, all waste containers (except drums) are opened and examined by WS&D [Waste Shipping] for any obvious prohibited materials, utilization of space, and damage prior to final closure. Procedures for closing and securing individual containers vary with the container type. All containers are gross weighed on a calibrated scale to provide accountability and ensure compliance with weight limits. Tare weights may be actual weights, or factor weights based on weighing given quantities of empty containers.

1.4.10 Radiological Control [Radiological Safety] monitors all transport vehicles and each waste container prior to shipment. Both inbound and outbound vehicles are monitored. Survey measurements on packages are taken prior to preparation of the shipping paperwork. Radiological swipe samples may be taken later, but are required prior to shipment. Administrative time limits are imposed on the swipe sample results commensurate with the package storage environment.

1.4.11 The Waste Shipping Coordinator receives the Item Production/ Certification/Identification Cards (W-65 cards) for each package along with other documentation, and uses this information to prepare the REECo Package Storage and Disposal Data Report, and a tally sheet, for each shipment. Once completed, the entire paperwork package, which includes such information as radiological surveys for radiation emission, waste characterization documentation, and a partially completed Nuclear Materials Shipping Order, is delivered to Quality Control/Waste Verification for review. Accepted packages are forwarded to the Quality Certification Department.

1.4.12 Quality Certification reviews the shipment paperwork package for accuracy and completeness, verifies compliance with requirements, and approves the Waste Package Disposal and Data Report as required by Procedure EQP-12.07. This is a key control point, as only paperwork listing wastes accepted by formal characterization by WC [FME], and that are listed in a DOE/NV approved application to ship to the NTS will be approved. Although a comprehensive check list is used, certification personnel are not restricted to the checklist requirements, and are encouraged to investigate any anomaly. Acceptable Package Storage and Disposal Data Reports are forwarded to a Waste Certification Official for signature along with other pertinent paperwork (e.g., tally sheet, nuclear materials shipping order, radiological survey report, and packaging curie list) approved shipment packages are forwarded to MC&A.

1.4.13 MC&A completes and approves the Nuclear Materials Shipping Order, and forwards it along with other pertinent information to the Manager of Logistics Administration & Inventory Control & Warehousing Section [Logistics Administrator] to schedule shipment and arrange for transport with an approved carrier.

1.4.14 Radiological checks are made on vehicles entering the site for loading. Also, the trailers receive a limited mechanical check, which is performed by the mechanics. Once accepted, trailers are staged for subsequent use. At the loading area, a visual examination is made of the interior and loading surfaces to determine suitability for loading.

1.4.15 A WPC, or infrequently a WCO, makes a visual inspection of each package in each shipment while still at the staging area. Packages are checked for damage, closure, weight limits, identification, labeling, and marking. Administrative controls include a verification comparison of container identity and other information on the package against that on the respective Package Storage & Disposal Data (PS&DD) Report and corresponding "circle copy." An approved inspection plan, or checklist, is used to document verification of acceptance, and is signed by the WPC or WCO directly involved in the examination. The WPC or WCO then signs and affixes an NV-211 sticker to each package on the basis of the examination and confirmation that the PS&DD Report was signed by a WCO. The WCO's approval signature on the PS&DD Report provides verification that documentation is in file justifying certification and shipment of the packaged material(s). Once the NV-211 sticker is affixed, a tamper indicating device (more than one if needed) is applied to each waste container.

1.4.16 At loading, a signed copy of the Package Storage & Disposal Data Report, and accompanying paperwork, is used by a WPC or WCO to verify that only packages approved for shipment are loaded. The actual loading is witnessed to ensure that packages are not damaged in the loading process, and that loading is conducted in accordance with procedure. When vans are left unattended, with doors unlocked or unblocked, a temporary security seal is placed on the closure mechanism. Absence of a security seal, after a period of inattention, requires careful examination to assure the integrity of the contents. When shipments are made on flat bed trailers, security seals are attached to the package closure mechanisms to detect possible intrusion.

1.4.17 Once loaded, shipments are weighed and moved to the traffic area. Drivers are scheduled to the site and are required to assist in performing a limited vehicle safety check prior to release of the shipment. Radiological checks are made of the outgoing vehicle, including the cab, to ensure compliance with 49 CFR. A WPC witnesses a driver's check of the vehicle and checks tire condition and placarding.

1.4.18 The Logistics Administration & Inventory Control & Warehousing Section [Logistics Administrator's group] prepares the Bill of Lading for each shipment and submits a collection of shipment paperwork to a Waste Certification Official for approval. After a preliminary check by the WPC, a comprehensive review is made of the paperwork supporting shipment, which includes: Nuclear Materials Shipping Order; Bill of Lading; drivers' routing instructions; permit; radiological surveys of the vehicle; and various checklists, including some prepared by Quality Certification personnel. Signatures are verified, including the Waste Certification Official's approval signature on the Package Storage and Data Disposal Report. Once completed and accepted, the Waste Certification Official signs the Nuclear Materials Shipping Order and a Certification Statement in compliance with NVO-325, which officially releases the shipment to the Manager of Logistics Administration & Inventory Control & Warehousing Section [Logistics Administration]. Based on traffic requirements, the Logistics Administration & Inventory Control & Warehousing Section, or his delegate, signs the Bill of Lading to authorize shipment to NTS. A unique tamper-proof security seal is affixed to the closure mechanism of each van to provide evidence of any unexpected intrusion during transit.

2.0 WASTE CERTIFICATION PROGRAM

2.1 Quality Assurance Policy Statement - Responsibilities

This WCPP and associated implementing procedures incorporate the FERMCO policies for achieving or exceeding the required level of quality for the packaging and shipping of waste to the NTS for disposal. These documents define a program which provides assurance that DOE, EPA, DOT, and NTS WAC are met.

The authority and responsibilities for the overall quality of the program rests with the President of FERMCO. Members of the President's staff are responsible for implementing the program in their organizations. The responsibility for establishing, administering, and evaluating the effectiveness QA Program is assigned to the Manager of QA [SA,CIP&QA]. As required by NVO-325, the Manager of Waste Storage & Disposition Section [Low Level Waste Program] is responsible for defining the management system to be used, defining and effecting desired results, and overviewing the certification program to assure that program quality has been satisfactorily accomplished. The CWCO is responsible for coordinating and managing package and shipment certification activities. Each employee is responsible for compliance with the requirements of this WCPP and the implementing of procedures as they apply to his/her work assignments. Organization charts are shown in Figure 1.

Organizations with the FEMP shall provide support as necessary to certify LLW for disposal at the NTS. Certification shall be based on test results and documentation of compliance, which may originate in any one of these groups. To provide highly visible evidence of compliance, a WPC, or a WCO, shall sign an NV-211 sticker affixed to each package certifying that the package meets the specified requirements of DOT (49 CFR), EPA (40 CFR), DOE/NV (NVO-325). Prior to LLW leaving the FEMP, a Waste Certification Official shall sign a certification statement that all packages in each shipment do not contain hazardous waste, as defined in 40 CFR 261, or the State of Ohio hazardous waste regulations, as defined in the Ohio Administrative Code (OAC) 3745-54.

2.2 Statement of Independence - Interface Control

In the performance of duties, WCOs report directly to the Quality Certification Department and WPCs report to the Quality Control Department [Sitewide QA]/Waste Verification Section. Neither of these organizations are directly involved in the actual packaging and shipment of waste. The Manager of Quality Certification reports to the Manager of QA [SA,CIP&QA], who reports to the President of FERMCO.

The Chief Waste Certification Official, as Manager of Quality Certification, directly supervises alternate WCOs and has overview responsibility over WPCs in the performance of certification activities. WCOs and WPCs have the freedom, and are encouraged, to bring certification issues to the attention of the Chief Waste Certification Official for resolution.

The Chief Waste Certification Official has final authority over certification, and is obligated to respond in writing to written requests for resolution of issues presented by the WCOs and WPCs. However, this authority can be revoked at any time by the President of FERMCO by providing proper notification. As delineated in NVO-325, FERMCO is required to provide DOE/NV and REECo/WMD immediate written notification of any changes in the names of WCOs (Includes CWCO) and WPCs.

Both WCOs and WPCs are trained and qualified in accordance with approved procedures to provide necessary skills to make independent judgement decisions regarding certification of low level waste. The Manager of QA [SA,CIP&QA], or his delegate, certifies that personnel are properly trained and qualified to certify waste packages and shipments are applicable. (Reference Appendix I, Section B, FEMP Department Procedures EQP-6.05 and 6.06 for specific qualification requirements.)

Other individuals who are independent may perform certification verification work provided they are properly trained for the work performed, as determined by the CWCO. However, only WCOs are authorized to sign certification statements and release shipments, and only WCOs and WPCs are authorized to sign the NV-211 package certification stickers.

2.3 Waste Certification Program Description

The Waste Certification Program provides verification and documentation that waste packages, the materials contained therein, and all package labels and markings thereon, comply with DOE, DOT, and NTS requirements as specified by NVO-325, latest revision, prior to shipment to the NTS. Specific requirements regarding disposal of waste are issued by the FERMCO WC [FME] Section, and are used by Waste Certification personnel as additional control.

Competent and trained individuals are employed in the packaging, marking, labeling, verifying, and certifying process to provide and collect physical evidence of compliance.

Trained and qualified certifiers (QA Procedure EQP-6.04 and 6.05) are responsible for verifying that all waste packages are in compliance with all applicable requirements. The WPC is responsible for certifying each package for shipment to NTS. The program empowers the Waste Certification Official, as an independent overviewer, authority to withhold approval of shipments. The Deviation and Corrective Action Reporting System (SSOP-0023) provides a means to address questions regarding disposition and corrective action.

The verification and certification of activities, packages, and shipments are directed by Quality Certification procedures EQP-12.03, Certification of Waste Package Examination and Sealing for Off-Site Shipment; EQP-12.04, Certification of Loading and Shipment of Low-Level Radioactive Waste; and EQP-12.07, Certification of Low Level Waste Shipments to NTS. Numerous other procedures control activities providing documentation used in the certification process. These are included in the list in Table I.

The integrity and acceptability of waste packaged is monitored and documented by checklists or by approved inspection reports.

Prior to initiating shipment of waste, a WPC and a WCO checks the documentation supporting each shipment to ensure conformance to NTS waste acceptance requirements. Material descriptions and traceability are checked against characterization documents to verify that the material has an acceptable characterization determination. Various other checks are made at this time.

Prior to loading packages in each shipment, a WPC or a WCO verifies that the record of contents of each package has been checked and approved by a WCO. All packages are visually examined for damage and presence of proper marking and labeling. Once conformance has been determined, the WPC or WCO performing the examination signs and dates the NV-211 label, affixes or witnesses the affixing of the NV-211 label to the container. One or more tamper indicating devices (TIDs) identified by stamp of initials is affixed to each container to detect possible intrusion.

The loading of each vehicle is monitored by a WPC or WCO to verify that the correct packages are loaded properly, and packages are not damaged during loading. Prior to loading, radiological results are checked for compliance. Also, verification is made that the trailer to be loaded was accepted on incoming inspection.

Prior to shipment certification and release, the WPC witnesses an operational check of each vehicle. The WPC verifies the placarding and application of uniquely numbered seals either to individual packages on flat bed trailers, or on the exterior of vans. The WPC makes a preliminary check of the loading and shipment paperwork, and presents the paperwork package to the WCO for final review and approval, acknowledged by signing the Nuclear Materials Shipping Order. Once approval is complete, the WCO signs the Shipment Certification Statement (Figure 13) to release the shipment.

2.4 Qualification of Waste Certification Officials

Waste Certification Officials are qualified per procedure EQP-6.05, Qualification of Waste Certification Officials. Qualification is based on education, experience, surveillance skills, and rights of management. In order to be certified as a Waste Certification Official, the candidate must understand and be able to apply the requirements unique to the waste type and the acceptance criteria specific to the repository, treatment, or disposal facility. Waste Certification Officials are required to have working knowledge of applicable regulations and procedures and to be familiar with prohibited and non-prohibited waste materials and their chemical constituents. Experience and ongoing training in environmental compliance and DOT regulations are required. This training is accomplished through attendance at DOE sponsored courses, as well as other agency courses that may be available.

2.5 Qualification of Waste Package Certifiers

WPCs are qualified per procedure EQP-6.04, Qualification of Waste Package Certifiers. Qualification is made on the basis of education, experience, management judgement, and surveillance skills. In order to be certified for a waste package type, the candidate must understand and be able to verify the requirements unique to that package type and the acceptance criteria unique to the repository, treatment, or disposal facility. Specific verification skills include specialized areas of expertise, such as vehicle inspection, understanding of applicable standards, and FEMP requirements.

2.6 General Requirements for Certification/Verification Personnel

Personnel performing certification verification work are selected and assigned work based upon work experience and training. Formal training is required on NVO-325, the WCPP, and the W-65 card (FMPC-CONT-1945-XX, Item Production/Certification/Identification). Supplementary training is prescribed commensurate with needs.

3.0 DESIGN CONTROL

3.1 Design of Waste Certification Process

At the present time, no actual design work relating to the waste certification process is in progress. However, development and control of design is controlled by Site Procedure FMPC-0702. This procedure specifies the activities that are required to assure that design requirements are correctly translated into specifications, drawings, procedures and instructions. It also specifies requirements for a formal design verification process.

To assure waste determination, each generator must initiate an "Item Production/Certification/Identification" (see Figure 14). This form verifies the container is empty before filling, and that the container is filled with only the waste as specified. When the container is filled, the form is completed and signed by the generator. Prior to the shipment of waste, the signed form is checked by Quality Control and sent to Quality Certification and is maintained as a permanent record.

Processes that directly affect the certification of the waste material shall be performed in accordance with written procedures or instructions (see Table I). Assurance that current SOPs are being followed shall be ensured by internal audits and surveillances, and by inspections performed by QA personnel. Data from sample analyses offer a secondary assurance of conformance, and shall be collected and kept as recorded evidence of verification of the processes.

A performance-based in-house training program shall be utilized to train personnel involved in waste processing. This ensures that supervision and operation staffs have the necessary skills to prepare waste for shipment.

3.1.1 Waste materials shall not be mixed with other waste or materials which could cause any harmful effects, such as heat or pressure, fire or explosion, toxic dusts, fumes, or gases or flammable fumes or gases (40 CFR 265 Appendix V). Compatibility determinations are based on analytical data and/or process knowledge. The type of waste container selected to hold a waste is compatible with the respective waste, and meets requirements of the Department of Transportation (49 CFR 173.411, 173.421 and 173.425).

3.2 Waste Form Processing for Compliance

The Operational Defense Waste Management Plan for the NTS, NVO-325, and DOE Order 5700.6C establishes procedures and criteria for the safe shipping, receiving, processing, disposing, and storing of radioactive defense waste at NTS. These criteria are based on current low level radioactive waste management practices and guidelines of (DOE Order 5820.2A). The quality assurance guidelines of DOE Order 5700.6C and ANSI/ASME NQA-1 have also been incorporated in the FERMCO Quality Assurance Program Description (RM-0012). All work is performed in accordance with this manual.

Old, stored waste forms will be handled in much the same manner as newly generated waste. A waste characterization shall be performed to determine major radionuclide content and a RCRA determination, if not previously done. After characterization is complete and the waste form meets NVO-325 requirements as stated above, the waste shall be processed, if necessary, and repackaged or overpacked for shipment and disposal to meet NVO-325 packaging requirements and DOT transport regulations. Traceability of old waste to the respective characterization will not necessarily be maintained with the FMPC-CONT-1945-XX, Item Production/Certification/Identification card. These wastes may be identified by Nuclear Materials Control Inventory records and the container identify used in the characterization process.

3.3 Waste Packaging Processing for Compliance

Waste packaging criteria for LLW shipment to the NTS for disposal shall meet DOT regulations, 49 CFR 173, Subpart I. Standard operating procedures listed in Table I concerning storage and off-site shipments shall be used to assure that all shipments meet DOT requirements.

4.0 PROCUREMENT DOCUMENT CONTROL

The procurement document package is prepared by requisitioners/users, and includes drawings, specifications, and quality requirements for suppliers of critical items, such as waste shipping containers. The document packages are reviewed by quality, safety, security, and financial organizations as appropriate to assure that specifications are complete, appropriate quality level assignments are made, and that quality requirements are included that correspond to the quality level assigned for the procurement. The procurement review process is contained in site procedure FMPC-0302, Request for Purchase.

Quality Assurance provides Acquisitions & Finance with recommended supplier lists that are generated based on QA supplier surveillance activity and performance on prior contracts.

Critical characteristics for inspection are identified during QA review of the specification documents with a cognizant engineer representing the requisitioner/user of the items being procured, and an Inspection Plan is prepared. The Inspection Plan is used by Quality Control during surveillance activity conducted at the supplier's facilities in the verification of inspection of the items being procured. Surveillance activity at the supplier's facilities is used to verify compliance with the procurement contract requirements and eliminate receipt and isolation of nonconforming items at the FEMP. Receiving Inspection for waste shipping containers is administered by Quality Assurance and Quality Control [SA,CIP&QA]. A prearranged Inspection Plan is used for this function. Acceptable items are tagged acceptable (Form FS-F-2707) and released for use. Nonconforming items, identified during FEMP Receiving Inspection, are isolated, red-tagged (Form FS-F-2708), and dispositioned based on approved Deviation/Corrective Action Reports.

Traceability is maintained for the Procurement Document Control activities for the critical items listed in Table V.

5.0 INSTRUCTIONS, PROCEDURES & DRAWINGS

5.1 Procedures for Waste Generation, Segregation, Packaging & Shipping

When a waste operations process is in the development state, qualification of the new or revised process shall be achieved in accordance with the documented "Test Authorization," (Operating Manual OM-0003 and Site Procedure PP-0721). Results of the development and a record of the changes to the process will be documented by the Test Coordinator in a "Test Authorization" Completion Report.

Prior to implementation, procedures developed for waste generating, segregating, packaging, and shipping must be routed and approved by all departments involved in the process. Procedures are approved by the applicable department managers. The approvals verify that particular control requirements are applicable for their intended use. Understanding and acceptance are indicated by the signature(s) and the date(s) on the procedure.

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The release and distribution of Site Plans, Site Manuals, and Site Standard Operating Procedures are controlled by the Forms and Procedures Development [Commitment and Documentation Control] Section of the Administration Services [Resource Planning, Scheduling, and Integration (RSP&I)] Department which is part of the Administration Division. This group is also responsible for directing the user to dispose of applicable procedures.

Some procedures are routed and controlled within each individual department (e.g. Radiological Control [Radiological Safety]). These procedures are approved by the responsible division manager, and are controlled and released by the applicable department.

In accordance with the site document control procedure, all procedures will be reviewed annually for accuracy and to assure they are up-to-date.

5.2 Analytical Procedures

Wastes are sampled for hazardous waste determination according to sample plans developed, the FEMP Waste Characterization Plan, and the U.S. EPA method as described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846), and the FEMP Procedure SOP 20-C-805, "Sampling Drummed Waste for Hazard Identification."

Samples may be taken using an open scoop, a slotted pipe, a sheathed or closed auger, or other approved sampling device, depending on the nature of the material. The sample obtained from the waste material requires sample preparation, which may including: drying, milling, blending, screening, pulverizing, and subsampling. The prepared sample is then submitted to the FEMP Laboratory for the percent uranium (or thorium) analysis and isotopic evaluation. Before a given sampling device or procedure can be finally accepted for sampling purposes, it is necessary to evaluate the accuracy and precision of the method as it is used to sample a specific type of material. It is also desirable to provide periodic and/or continuous checks on the various sampling techniques. These evaluations may be accomplished in a number of ways.

Sampling of uranium (or thorium) solutions is accomplished by taking dip samples or removing a sample from a well-agitated storage tank using a liquid sampler. However, bulk solids sampling presents the greatest difficulty. Some of the various methods for evaluating sampling procedures are:

1. Duplicate sampling by identical procedures.
2. Dual sampling, using at least two different samplers.
3. Dilution of inert material with a known amount of standard oxide, and blending the mixture.
4. Process evaluation in which samples of questionable materials, not amenable to sampling in their original state, may be evaluated by comparison with samples taken of the processed or oxidized product, once it is in a form suitable for sampling.

In all cases, analytical variance statistical techniques are used in determining the significance of differences between sampling tests. Sample results are entered into the Analytical Laboratory Information System (AnaLIS) and available to the users.

Some materials, such as contaminated baled trash and solid metal, cannot be representatively sampled for percent uranium. These types of materials are assigned factor assays. These factor assays are based upon recovery campaigns, special studies, or process knowledge estimates.

Tentative assay values are used for materials routinely produced, until individual lot assays are performed by the Analytical Laboratory Services Section [Analytical Laboratory]. A complete factor and tentative assay list is issued as needed by MC&A for general use.

The MC&A Section calculates element and isotopic content by weight. The necessary release documentation for off-site shipment is then prepared. All process residues prepared for off-site disposal are sampled, and analyses are performed in accordance with approved analytical laboratory methods.

The hazardous waste determination performed on FEMP waste follows a strict chain-of-custody protocol for collected samples. Chain-of-custody accounts for the transfer of each sample from collection through delivery to the laboratory. Following collection of the samples for hazardous determination, the lids on the containers shall be securely fastened, and proper chain-of-custody documentation prepared (see Figures 5 & 6).

5.3 Sample Custody

Routine samples of process waste collected, while packaging, are accompanied by an "Analytical Laboratory Sample Seal," "Analytical Laboratory Sample Label," and a "Chain-of-Custody Record," FMPC-PRO-3112. These forms are completed by the requester, who retains a copy and forwards the form and samples to the analytical laboratory.

Wet/dry residue samples for percent uranium are returned to the waste stream for disposal. The Chain-of-Custody Record is kept for at least three years by the sample receiving laboratory. The [Communications Services Group] maintains the Chain-of-Custody Record and analyses reports for a minimum of three years.

Sample determinations for hazardous materials following EPA (SW-846) protocols require chain-of-custody documentation to accompany the samples. Figures 5 and 6 show these FEMP forms.

5.4 Drawings - Facilities, Process Equipment & Forms Control

Documents (plans, drawings, specifications, procedures, instructions) that establish the waste process and the integrity of the waste container and its contents shall be controlled and maintained for a period of 20 years. Changes to these documents are initiated, reviewed, and approved by the same department/section that originated and approved the controlled documents. Tables II and III identify the documents to be controlled.

Each process, waste lot, or batch is accounted for by item number, net weight, element weight, and isotopic weight, which are the result of actual measurements. Lot numbers are assigned and controlled in accordance with RM-0005, FEMP Lot Marking and Color Coding System. The movement of material from a location is strictly controlled by MC&A and must be authorized in advance. Physical inventories are taken and recorded annually. All accounting records are maintained in computer data bases.

All box type containers are tracked and controlled in accordance with Site Procedure SSOP-0027, Control of Box Type Containers.

Whenever amenable, composite samples are taken of each lot during the waste and production process to verify isotopic and percent uranium content. Sampling and analysis of each individual waste is performed as required to classify each waste. Sampling of drummed waste is performed in accordance with SMS-93-290, Prototype Sampling and Analysis Plan for Containerized Wastes at the FEMP.

Forms are controlled by unique numbers that are traceable.

5.5 Inspection & Certification Procedures

Inspection and certification activities shall be identified on documents traceable to the items, inspected or certified. Table I lists the procedures in which inspection and certification activities are documented. Inspection for certification is included in certification procedures EQP-12.03, EQP-12.04, and EQP-12.07. Inspection of procured martials, equipment, work-in-process, and completed items is addressed in SSOP-0075.

5.6 Method for Keeping Pertinent Regulations Up-To-Date

Compliance documents, federal and state regulations are ordered annually by subscription through the FEMP Project Document Control Section [Library] with approval by DOE. [Procedure for Obtaining New Library Materials (TS:RHG:88-003)]. Current regulations are maintained in the library and the CFR are maintained in the Legal Library. Other FERMCO departments must request copies of regulatory documents through the Technical Library. A list of waste processing specifications appears in Table VI.

Subscription copies of Title 49 CFR, Part 100-177, and Title 40 CFR are maintained by the CWCO, and are kept up to date for use by WCOs and WPCs in the performance of their work.

All procedures and manuals (including this document) are reviewed by the responsible departments on a periodic basis and revised as required.

Regulatory Programs [Regulatory Affairs] initiates and routes new regulatory requirements to WS&D Section [Low Level Waste Program], Quality Certification, and waste generators in a document titled "Regulatory Compliance Guide." They also issue Federal Register Highlights and/or notify management by memorandum.

6.0 DOCUMENT CONTROL

6.1 Waste Certification Program Plan

The WCPP shall be controlled with unique numbers and identified on a controlled master list, so that the number designating the current issue can be quickly and easily checked to ensure that the most up-to-date version of a document is used. This list is updated on a periodic basis as the document(s) are changed and reissued. DOE/NV and REECo shall be issued a control copy of the WCPP, and significant revisions shall be submitted to DOE/NV and REECo for review.

6.2 Document Preparation, Review, Approval & Issuance

Site Document SSOP-0103, FEMP Site Document System, defines the system of documents by which the FEMP is managed, and details the requirement for development, preparation, and control of these documents.

Site document preparation, review, approval, and issuance is under the control of the Forms and Procedures Development [Commitment and Documentation Control] Section in the Administration Division [Resource Planning, Scheduling, and Integration]. Preparation of site documents involves a subject matter expert, a technical writer, and the user. All site documents undergo an extensive review process.

Department level documents are prepared, reviewed, approved, and issued by each department. Reviews and issuance of these documents may cross departmental lines. However, approval is by the Manager of the department having ownership of the document. It is the responsibility of each department to exercise control of their documents.

Some documents are controlled and issued by the Project Document Control Section [Library], or are available for use in the library.

Controlled documents are maintained as stated in 6.1. Table I contains a list of documents to be controlled.

7.0 CONTROL OF PURCHASED ITEMS & SERVICES

7.1 Receipt Inspection

All shipping containers are initially reviewed upon receipt at FERMCO for visible damage and completeness of the shipping orders. Quality Control [Sitewide QA] is responsible for receipt inspection of items as required. All inspections are documented on an inspection form containing the acceptance requirements. All items found to be acceptable are tagged and released for use (Figures 7, 8, and 9). Items found to be nonconforming are tagged and a nonconformance report issued (see Section 15.0). In addition, inspections of containers are reviewed by Quality Control [Sitewide QA] at the supplier facility prior to shipment to FERMCO.

7.2 Contract Review

Review of contract and supplier submittal is performed by QA, the requisitioner, and Acquisitions & Finance Division. Based on the importance and complexity of the purchase, requirements are placed in the purchase order for QA to conduct, as applicable, supplier surveillances of fabricating, inspecting, testing, and shipping. During the course of the procurement process, documents by the supplier are submitted for FERMCO approval. The requisitioner, Acquisitions & Finance and QA and/or Quality Control may witness supplier activities, if deemed necessary. Controlled items are listed in Table V.

7.3 Purchase Requisitions, Purchase Orders & Invoices

A purchase requisition package is initiated by requisitioners/users of the items to be procured which includes drawings, written specifications, and quality requirements for FEMP suppliers. The requisitioner/user applies a quality level numerical indicator to the requisition package and the package is reviewed and approved by QA and Safety prior to receipt by Acquisitions & Finance processing. Control of purchase is maintained by Site Procedure FMPC-302, Request for Purchase, and SSOP-0315, Controlling the Purchase of Supplies and Equipment.

The FEMP QA Program provides a grade level system to indicate the appropriate management system controls to be imposed in order to assure conformance to applicable quality requirements. Quality levels are defined and guidelines are provided for matching quality requirements to quality levels in Site Procedure SSOP-0045, Identifying Quality Assurance Program requirements for Quality (RISK) Levels. Quality levels are assigned, based on a risk assessment of the consequence and probability of a failure. Instructions for performing a risk assessment and a matrix for determining the appropriate quality level assignment are provided in Site Manual SM-0001, Risk Assessment and Management (RAM) System Manual.

The approved requisition package is Acquisitions & Finance's authority to initiate the procurement process. Acquisitions & Finance Division evaluates and selects suppliers based on a suggested suppliers identified on the requisition by the requisitioning party, recommended suppliers lists from QA, and evaluations made from bid/proposal responses solicited from potential suppliers. Based on these evaluations, Acquisitions & Finance Division issues a purchase order to the selected supplier. The purchase order is the contract agreement between the FEMP and the supplier.

Acquisitions & Finance Division maintains a database for purchase order information. Receiving information is entered into the purchase order database direct by FEMP Logistics Administration & Inventory Control & Warehousing Section [Receiving] personnel. Logistics Administration & Inventory Control & Warehousing Section [Receiving] people can access the database for entry of receiving information or pricing. Critical items, as listed in Table V, are then moved into the Receiving Inspection Area for inspection by Logistics Administration & Inventory Control & Warehousing Section [Facilities and Warehousing].

7.4 Source Inspections

Supplier inspection of containers, assay systems, and instruments are witnessed by Quality Control and Acquisition & Finance Division [Procurement Contracts Sections] as needed. Surveillance of suppliers is planned and performed during material processing to assure the supplier satisfactorily performs the fabrication, inspection, and testing prior to shipping according to purchase order requirements. Surveillance activities, including supplier discrepancies and audit results, are documented. Source inspections of procured items are documented in surveillance reports, and copies are sent to QA for informal audit review.

8.0 IDENTIFICATION & CONTROL OF MATERIALS, PARTS & COMPONENTS

8.1 Containers & Packaging Materials

All containers used for shipment to NTS shall be properly designed to reduce the chance of radiological or occupational safety occurrences during the transporting, handling, and disposing operations. The size and the load of each container shall be controlled to minimization the volume of waste shipped and disposed at the NTS.

Package materials are maintained and controlled in FEMP Stores (stock room). Each item is numbered and cataloged. Daily computer printouts show maximum/minimum levels of items for reorder as necessary. Economic order quantity calculations to determine annual usage are performed on items which are not needed as often.

8.2 FEMP Materials Lot Marking System

Filled waste containers are marked in accordance with the "FEMP Lot Marking Code and Color Coding System," RM-0005. This code system identifies the waste material and the source. The system utilizes a 15-digit number which appears in the following sequence:

4-digits **Production Order (PO) Number**, which is an alpha numeric number assigned at the FEMP. Waste packaged specifically for shipment to NTS may be marked with the PO Number N003 for uranium wastes and PO Number N004 for thorium wastes.

or

When the PO Number is not applicable, other code designations may appear here. For LLW, a "W" as the first digit indicates the material is a nonrecoverable radioactive waste. The three digits following the "W" are the FEMP's best estimate of the secondary nuclide content expressed in percent of the total nuclides.

3-digits **Source Code**. The source code will vary for LLW dependent of the source location of the waste when packaging was completed for shipment. Thus, this code does not always indicate the initial source location or origin of the waste.

1-digit **Class or Enrichment Code.** The code can either be numeric or alphabetic. Codes currently assigned for waste are:

- P Depleted uranium (<0.710% U-235)
- N Normal uranium (0.710% to 0.712% U-235)
- V Enriched uranium (>0.712% U-235)
- T Thorium

3-digits **Material Description Code.** These codes are used at the FEMP to designate residue and product categories, which include the material codes for waste shipped to the NTS. Although an extensive number of codes are assigned, some are defined more generically to permit packaging and lotting the more diverse materials with similar characteristics together.

4-digits **Lot Sequence Number.** For residues, the 4-digit number identifies consecutive lots of specific material in sequence where more than one lot was produced in a month. Where not more than one lot was produced in a month, the lot sequence number indicates the consecutive month of production starting with January 1962 as Lot 0001. Thus, the lot designation for January 1992 is 0361, February 1992 is 0362, and etc.

For trash, the last three digits of the four digit number indicate the consecutive lot sequence number that started in January 1962 as explained above. The preceding digit, or first digit, indicates the trash description as defined in the FEMP Lot Marking Manual as follows:

1. Glass
2. Rubber Hose
3. Plastic
4. Metal
5. Concrete, Ceramics, Soil
6. Contaminated Burnables
7. (not used for waste shipped to NTS)
8. Floor Sweepings
9. Other (Type of trash stenciled on container until dispositioned for shipment)

Examples of the lot marking for LLW are as follows:

Example 1: W050 - 100 - P003 - 9144

W = Waste
050 = Applicable to waste (0.5% U-235)
1 = Produced in Plant 1 Area
00 = General (no specific source area designated)

P = Enrichment designated as Depleted
003 = Material description is "Non-recoverable Trash - for Off-Site Burial

9 = Other trash
144 = The 144th lot produced sequentially, where rate of production was more than one lot each month.

Example 2: 0000 - 800 - T167 - 0024

0000 = (The first four digits of the code was not used and appear as zeros.)

8 = Produced in Plant 8 Area
00 = General (No specific area designated)

T = Thorium
167 = ThO_2 Powder - Refinery Feed

0024 = The 24th lot produced sequentially, where rate of production was more than one lot each month.

The lot marking system was designed many years ago to provide identity and method of accounting for radioactive materials associated with the defense program at the FEMP. During this extensive period, the system worked well, but required numerous changes to better account for an ever changing diversity of materials. The system is still undergoing change, much of it in response to the conversion of the FEMP from a production site to an environmental remediation site, which has induced a need to better define the non-nuclear components of the various radioactive and radioactive contaminated materials.

Since there was, and continues to be, a practical limit to the number of material description codes and associated control and segregation work, some material description codes were intentionally made more generic. As a result, it is possible that like materials fitting more than one description may have been lotted at different times with different material description codes. Or in the case of updates to the coding system, a new material description may have been found more applicable to the material being lotted than a previously used code. Thus, it is important to understand that for nondescript materials that were lotted, the material description will not necessarily provide an exact physical description of all materials within a respective lot.

8.3 Analytical Calibration Standards

Primary reference standards are obtained from the National Institute of Standards and Technology (NIST) or other reliable sources. Secondary reference standards are traceable to primary standard, or compared to a primary standard within the FEMP Analytical Laboratories, if available. All standards used for TCLP analyses are traceable to the NIST. Preparation of secondary standards within the Analytical Laboratory Services [Analytical Laboratory] are per approved documented procedures. Documentation of the preparation of secondary standards is complete and accurate.

9.0 CONTROL OF PROCESS

9.1 Sample For Waste Analysis

Process waste samples are collected when characterization by process knowledge cannot be completed and delivered to the FEMP laboratory for analysis. MC&A calculates an assay factor to estimate percent uranium on waste for which samples are not obtained. A chain of custody for laboratory samples is presently being used (Figures 5 & 6).

9.2 Control of Processes

WAC are incorporated by each organization (e.g. QA, Radiological Control [Radiological Safety], RSO [Shipping and Support Services] [Waste Shipping], etc.) into established procedures for the safe processing of radioactive defense wastes based upon current LLW practices and guidelines (DOE Order 5820.2a). QA guidelines of DOE Order 5700.6C and ANSI/NQA-1 are incorporated into the FEMP waste processing system.

9.3 Nuclear Safety

The quantity of fissile materials within a package shall be limited so that an infinite array of such packages will remain subcritical, even with close water reflection on all sides. This quantity shall be determined on the basis of a specific nuclear safety analysis, considering credible accident situations, and taking into account the actual materials in the waste. Title 49 CFR 173.451, "Fissile Materials - General Requirements" shall be followed.

9.4 Storage and Shipment

All low level radioactive waste destined for off-site disposal at NTS shall meet DOT regulations (49 CFR 173, Subpart I). Standard operating procedures listed in Table I, concerning storage and off-site shipments, shall be used to assure that all shipments meet DOT requirements. Packaging shall be consistent with 49 CFR requirements and NVO-325.

9.5 Certification Process

9.5.1 The certification process is designed to "certify" that each waste package meets all applicable criteria and is accompanied by all necessary documentation before leaving the FEMP site. Figure 3 shows a flow chart of the process and QA hold points.

9.5.2 Waste certification begins with the generator, who is responsible for initiating characterization of the waste by submitting a Materials Evaluation Forms (Site Procedure SSOP-0002). Based on the needs for characterization, the generator may be required to have the waste sampled. Once the waste is being packaged, the generator prepares an FMPC-ES&H-1945-XX form, "Item Production/Certification/Identification" card (see figure 14) for each package to provide traceability and document that the waste packaged was as described and not prohibited materials were included. If the waste is already packaged, there may be instances where the MC&A records may be used in lieu of nonexistent FMPC-ES&H-1945-XX forms.

This form requires completion and signature of the person packaging, or observing the packaging of waste, which can be an hourly or salaried person. The approval of the form shall always be a responsible salaried person. Personnel from the Quality Control [Sitewide Quality Assurance] Section periodically witness container filling in accordance with procedures, which requires full-time attention in some areas. Quality Control [Sitewide QA] also provides routine verification of waste packaged at subcontract projects on site.

9.5.3 The Quality Certification Department [Quality Certification Group], obtains information for certification from several sources. Considerable reliance is placed on Quality Control [Sitewide QA] for verification and certification of packages; WC [FME] for characterization of waste; Analytical for analytical results of materials characterized and shipped; ES&H/Radiological Control for radiological results; and MC&A for material control and waste information, and for formulation of factor assay analyses. The certification process utilizes the expertise of all pertinent organizations to the extent necessary to provide an authoritative basis for certification. All information used is related to the wastes of concern by a suitable reference identification supplemented by material descriptions as needed.

9.5.4 Waste Certification Officials overview waste packaging and shipment activities, and either directly or indirectly verify the adequacy and authenticity of documentation of certification. Based on their evaluation, certification is made or withheld. Reevaluation and changes in decisions are possible based on additional information providing there is valid technical justification for change.

9.5.5 Each filled container has an identification number that is unique either by itself or in combination with the FEMP lot code number assigned in accordance with RM-0005, FEMP Lot Marking and Color Coding System. This identifying information, and other pertinent information, is recorded on the FMPC-ES&H-1945-XX form (W-65 card), which upon shipment becomes part of the official certification file. (If individual packages are characterized without a W-65 card Nuclear Materials Control and Accounting Record may be used in lieu of the W-6 cards.) Once completed, the generator notifies MC&A who then requests transfer by RSO Division/RSO Operations Department/Facilities & Waste Operations Section [Shipping and Support Services]. The filled containers are then moved to Waste Storage & Disposition [Waste Shipping] for final shipment preparation, or to temporary storage. During the entire process, MC&A maintains an inventory and tracks the movement of all individual containers of LLW.

9.5.6 RSO Division/MM Department/WS&D Section [Waste Shipping] completes final shipment preparation and assigns the sequential shipment number. Drums, which have sequential numbers starting over with each sequential lot, are at this time sequentially renumbered for each shipment to avoid duplication. Traceability is maintained by recording the change on the Item Production/Certification/Identification card (FEMP-CONT-1945-XX), or on a Nuclear Materials Control and Accountability Record listing the identity change for each package.

9.5.7 WPCs and/or WCOs perform final examination of each package of waste. They may be assisted by other personnel in examining packages and affixing labels provided direct and continuous overview is maintained, and the person assisting is not required to make significant judgement decisions. The signing of the NV-211 sticker (legibly handwritten - not stamped) by a trained and qualified WPC or WCO certifies that the package complies with U.S. DOT, EPA, and DOE/NV requirements.

9.5.8 The loading of packages on the transport vehicle by Facilities & Waste Operations Section [Shipping and Support Services] is monitored by the WPC or a WCO to ensure that no damage occurs between certification and shipment. Transport vehicles are examined by WPC or WCO prior to and after loading. Facilities & Waste Operations Section [Shipping and Support Services] also checks the vehicles and the loading of the shipments.

9.5.9 Quality Certification provides control over materials shipped through an approval and certification process. The approval by a Waste Certification Official is required on the Storage and Disposal Date Report that is prepared for each shipment. The Nuclear Material Shipping Orders, and corresponding shipment certification statements, require approval signatures of a Waste Certification Official before shipments are released. Once this approval is complete, Logistics Administration & Inventory Control & Warehousing Section [Logistics Administration] is responsible for final release and arrangement for transport of each waste shipment. They provide notification to NTS of estimated arrival times, change in schedules, and other traffic related matters.

9.5.10 Deviation and Corrective Action Reports document disposition of nonconformances, including technical justification of acceptance. Disposition requires independent evaluation and approval by a QA evaluator. Nonconformances that do not meet requirements for shipment are unacceptable.

9.6 Shipping Process - Manifest, Labeling, Placarding, Weighing, and Loading

All radioactive waste shipments consigned to NTS shall be made in accordance with applicable Department of Transportation (Title 49 CFR) and DOE/NV requirements.

Special requirements for the documentation, labeling, placarding, weighing and loading are detailed in Department Procedure SOP-TRF-46-C-110, and Site Document PP-0314, Packaging, On-site Movement and Off-site Shipment of Materials.

10. INSPECTION

10.1 Waste Package Receiving Inspections

Inspections of waste packaging are conducted by the supplier per approved inspection plan, and witnessed by Quality Control [Sitewide QA]. On the basis of acceptable results, a Supplier Quality Assurance Release is issued to permit shipment. Issuance of a surveillance report documents all inspection activity. Once received at the FEMP, the waste containers are inspected for evidence of damage incurred during shipping and handling. An inspection report is issued, and containers are tagged accepted, on the basis of results.

10.2 In-Process Inspections

In-process inspections/reviews of identified waste operations processes are met through procedures and checklists. FEMP acceptance standards are:

- Incoming vehicle inspections
- Verification of materials packaged
- Container integrity
- Proper markings on exterior of containers, including gross weight (49 CFR 172.310a), and container identification
- Integrity of container liner as applicable
- Waste material sufficiently dry
- Proper seating and tightening of container lid and closure to specifications
- Contamination readings on exterior of packages and vehicles
- Radiation reading at specified points (packages and vehicles)

Analytical results shall be performed, as necessary, to verify that the chemical and radiological composition of the waste is within the requirements specified for shipment to NTS.

10.3 Define Waste Certifying Function

The waste certifying function is to verify compliance with NVO-325, DOE, EPA, and DOT requirements through inspection and examination and certification of shipments of low level waste to the NTS. Documentation of inspections may be in the form of checklists and/or inspection reports. Certification statements are provided in accordance with NVO-325 requirements.

Primary waste certification activities for individual shipments include the following:

- Verifying inspection of containers
- Examining empty containers prior to filling
- Witnessing packaging of low level waste
- Verifying acceptable resolution of Deviation (nonconformance) Reports
- Verifying documentation of waste inspection
- Examining required data reports
- Verifying characterization, including waste characterization checklists
- Verifying waste material traceability
- Inspecting package closure and general condition
- Verifying marking and labeling of packages
- Verifying vehicle inspection prior to loading
- Verifying radiological survey and contamination results for packages and vehicles
- Verifying and examining packages during loading of shipment
- Witnessing operability check of vehicle
- Examining shipment paperwork
- Verifying accuracy of electronic data transfer

11.0 TEST CONTROLS

11.1 Definition of Test

Tests that are required to verify and certify conformance to specification requirements shall be planned and executed. Characteristics to be tested and test methods to be employed shall be specified. The results shall be documented and their conformance with acceptable criteria shall be evaluated and included in the certification reports.

When a process is in the development state, qualification of the new or revised process shall be achieved in accordance with the documented "Test Authorization" (TA). Results of the development and a record of the changes to the process will be documented by the Test Coordinator in the TA completion report. Applicable management review and approval is required to issue a TA. Results of the TA can be utilized to develop procedures and specifications that address particle size, package design, labeling, exterior contamination, radiation levels at exterior surfaces, and chemical composition.

11.2 Analytical Test Controls

Analytical Laboratory Services Department [Analytical Laboratories Quality Control/Data Management] prepares and distributes quality control samples for the analytical laboratory. The individual laboratories analyze these quality control samples in the normal laboratory sample stream. Quality Control samples make up approximately 10 percent of the total samples analyzed. The following analytical laboratory controls are:

- An internal laboratory standard, reference standard, is used to analyze the measurement system to ensure it is "in control." The frequency of analysis of reference standards depends on the characteristics of the individual measurement system.

- A blank sample is formulated in the laboratory or field in order to duplicate a routine sample excepting the absence of the analyte. Analysis of blank samples provides data for determining interferences due to contamination, and for establishing lower limits of detection.

- Two kinds of samples are used for replication of analyses, duplicate and recycle samples. Replicate analyses provide data for the evaluation of the precision of an analytical method.

- Control samples are a sample of known concentration of either a primary standard or a standardized production material. These samples provide data for the evaluation of the accuracy and precision of an analytical method.

- Finally, the Analytical Laboratory Services [Analytical Laboratory] uses a spiked sample of a known amount of analyte. The percent recovery can be calculated from the difference between the measured concentrations of the spiked and routine samples. Analyses of the percent recovery from spiked samples is useful for determination of matrix and interference effects, determination of accuracy, and precision and testing for changes in analytical quality.

11.3 Traceability of Calibration Sources

The Analytical Laboratory Services [Analytical Laboratory Quality Control/Data Management] supervisor has the responsibility to monitor the laboratory activities for strict adherence to calibration/standardization programs documentation as is approved by analytical methods and/or SOPs. The calibration/standardization of a given piece of equipment involves the following considerations:

- frequency
- range
- reference standards
- environmental conditions
- documentation

The calibration/standardization of each piece of equipment is documented in a logbook, card, label, or other record as appropriate. This document permits monitoring of instrument or system status and traceability of results.

11.4 Operational Package Weight

Package weight is controlled with checklists and SOPs. Package weight limits are listed in SSOP-0075, SSOP-0078, SSOP-0079, and SOP-TRF-46-C-110. Most process waste is packaged and weighed at the point of generation, except for ISO (sea/land®) containers which are weighed at the central truck scale. RSO Operations [Shipping and Support Services] weighs construction waste to verify and record the package weight prior to transfer to WS&D Section [Waste Shipping]. Packages not conforming to weight limits are returned to the waste generator. Weights are recorded on the FMPC-CONT-1945-XX form as well as each individual container.

12.0 CONTROL OF MEASURING & TEST EQUIPMENT

12.1 Calibration Schedules & Stickers

Each FERMCO organization is responsible for ensuring that items requiring calibration are of the proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements. Calibration control shall be achieved by manuals and procedures that describe techniques and requirements for the frequency of calibration of the operating instruments. This control ensures that all instruments, gauges, and other measuring and test equipment are calibrated to the required accuracies. Devices that require a high degree of accuracy are checked daily by the user before using (e.g., radiological monitoring equipment according to SP-P-35-028). If this check reveals that the device is out of calibration, the device is removed from service and/or recalibrated before they are used.

Test equipment and measuring devices shall (as practicable) bear, by label, evidence that they are currently calibrated or certified for current use. Users shall be knowledgeable of calibration requirements, and are responsible for only using instruments that are operational ready. When measuring and test equipment is found to be out of calibration, evaluation shall be made and documented of the validity of previous inspection or test results and of the acceptability of items previously inspected or tested.

Analytical laboratory equipment and instrumentation, and field equipment and instrumentation, shall be calibrated in accordance with the FEMP Sitewide CERCLA Quality Assurance Project Plan. Requirements are that measuring and test equipment used in the field and the laboratory be controlled by formally proscribed calibration requirements. Equipment shall be of the type, range, accuracy, and precision necessary to provide data compatible with the proscribed Analytical Support Levels specified in applicable Data Quality Objectives of Project-Specific Plans. Calibration of the measuring and test equipment shall be performed using documented and approved procedures. When available, accepted procedures published by the American Society for Testing and Materials, the EPA, the NIST, or manufacturer equipment manuals shall be used. Variance from these procedures shall be justified and documented in Project-Specific Plans. Reference standards shall have known relationships to nationally recognized standards (e.g., NIST) or accepted values of natural physical constants (If national standards do not exist, the basis for calibration is documented). A log of calibration shall be maintained for each instrument.

Quality Control inspection equipment is either checked internally, or is serviced by contract. Procurement of these services is made per the FERMCO Acquisitions & Finance Control System.

Nuclear material scales are checked by the Maintenance and Support Services Department using standards traceable to standards obtained from NIST.

Maintenance and calibration of laboratory balances is contracted using services procured through the FERMCO procurement control system.

Calibration of radiological test instruments are traceable to NIST.

All measuring and test equipment is categorized into one of three types:

1. "casual" devices & systems that do not need to be calibrated in service
2. "routine" devices and systems that are to be included in a calibration recall program on a regular cycle
3. "experimental" devices and systems that are to be calibrated by, or at the direction of the user

Items that fall in the first classification are rulers, tape measures, levels, and other such devices. Hand-held radiation meters and counters are calibrated on a routine schedule and are on a recall program. The specific items requiring calibration and frequency of recalibration are listed in Table IV.

12.2 Environmental Controls For Measuring Equipment

The environmental conditions under which a piece of equipment is calibrated/standardized shall duplicate the environmental conditions under which the desired analyses will be performed. Control samples/standards are run to monitor the response of equipment.

13.0 HANDLING, STORAGE & SHIPPING

13.1 Not Adverse To Certification

Waste containers destined for off-site disposal at NTS are maintained in such a way as to not alter the container certification. All containers are permanently closed and/or locked to prevent tampering. Containers awaiting shipment must be placed in temporary storage. Although not held in a totally secured area, the stamped or initialed TID affixed to the container provides evidence of any tampering. Immediately prior to loading, containers are rechecked per SOPs and checklists to verify the original certification.

Administrative controls are used to ensure radiological smears of packages are representative. Waste packages are not to be stored for shipment in areas where there is danger of rapid contamination. Packages may be protected by covering, or enclosed (e.g., in transport van), in which case the radiological smear results do not have an expiration time. Radiological results for unprotected packages have expiration time limits as defined in Procedure SP-P-35-009.

13.2 Security

The FEMP, where LLW activities are conducted, is a fenced and secured area. The Administration Division/Security Department [Safeguards and Security Section] conducts random mobile tours of the site during the first shift (8:00 AM - 4:30 PM). During the off-shifts and weekends, some of the buildings are locked and security foot patrols are conducted throughout the site. Security must be notified to open the door of a locked building.

13.3 Fire Safety

Specific fire and safety controls are detailed in the SOPs of applicable operations/processes. Monthly fire and safety inspections are performed in the waste and process areas/buildings by the ES&H Division/Occupational Safety & Health & Medical Services Department/Fire Protection & Emergency Response Team Section [Fire and Safety Group]. A report is completed and forwarded to the facility owner. Special work practices, which may require additional monitoring by Fire Protection & Emergency Response Team Section [Fire and Safety Group], can be arranged on an as need basis.

13.4 ALARA

The "As Low As Reasonably Achievable" (ALARA) principle is a requirement for waste processes to implement programs to assure that exposures to chemicals and physical stresses are maintained within the guidelines and standards provided in DOE/OR 5480.4. Additionally, the reduction of radiation exposure is maintained with the ALARA principle adherence to DOE/EV/1830-TS, 4-80. A dosimeter program is utilized for FEMP personnel and subcontractors. Employees are trained to work each job with ALARA principle as a key practice. Also, each SOP is reviewed with ALARA goals effecting each new or revised work practice.

13.5 Compliance With Title 49 of the CFR and NVO-325 Shipping Requirements

Compliance with Title 49 of the CFR for handling, storing, and shipping are detailed in site and department procedures. Remediation Support Operation Division personnel [Shipping and Support Services] [Quality Certification] verifies by informal inspections that the enclosure and loading surfaces of vehicles are acceptable for use prior to loading. Quality Certification verifies packages are secured, marked, labeled, undamaged, loaded per procedure, and placarded as necessary (large containers loaded on flat bed trailers).

A radiation survey is performed to assure contamination levels are in compliance with Title 49 CFR criteria levels, and results are recorded on FMPC-ES&H-1596 and FS-F-1993 forms. The vehicle is weighed to ensure axle weights are within legal limits.

Containers are checked at loading against the Waste Package Storage and Disposal, and Tally Sheet, for:

- correct container identification numbers
- shipment number
- quantities
- gross weights
- waste stream number
- LSA/LQ/RQ labels attached
- DOT hazard labels as applicable
- inspect for any container defect
- proper container closure
- security seals
- NV-211 certification sticker attached
- Tamper Indicating Device (TID) attached

The Manager of Logistics Administration & Inventory Control & Warehousing Section [Logistics Administration], or his delegate, gives final authorization to release a shipment off-site with the signing of the Bill of Lading and the required 49 CFR certification statement. Signing is conditional on the necessary shipping paperwork being complete, and a Waste Certification Official's signature on the Nuclear Materials Shipping Order and certification statement required by NVO-325. The Waste Certification Official signs the foregoing documents on the basis of verification of signatures and completion of various forms and checklist required by procedures documenting the certification process.

An envelope containing copies of the Tally Sheet, Curie List, and REECo Waste Management Package Storage and Disposal Sheet is attached to the rear inside door, container or side panel, or given to the driver in the case of sea/land type cargo containers. Radioactive placards are posted, trailer doors closed, and a numbered tamper proof seal is applied to the locking mechanism.

Shipping documents are prepared in compliance with Title 49 CFR. Carrier/driver instructions, a signed copy of the Bill of Lading, Nevada Permit, Tally Sheet, envelope for consignee with Tally Sheet, Curie List, and Memo Bill of Lading are issued to the driver. Each driver is instructed to call FERMCO each day so that FERMCO can report any travel delay to REECo with a new estimated arrival time. If the trailer is not enclosed, the tamper proof seal is attached to the closing mechanism of each container.

14.0 INSPECTION, TEST & OPERATIONAL STATUS

14.1 Calibration Sources

The status of inspection and test activities shall be identified on documents traceable to the items tested or inspected. The status shall be maintained through indicators such as physical location and tags, markings, stamps, inspection records, or other needs.

Calibration stickers are placed on measuring and test equipment (Table IV).

14.2 Preventative Maintenance

Preventative maintenance on analytical measuring systems and instruments is provided by the Electronics Laboratory for analytical instruments, and by Safety and Training Instrument Laboratory (S&TIL) for radiological measuring equipment. Personnel performing preventive maintenance work have had manufacturer training courses for some of the equipment. Some complete service manuals and a limited stock of spare parts are available. The availability of these personnel and resources at FEMP provide a means of ensuring optimum performance and minimum downtime for instruments and measurement systems.

Vendor service contracts or contracts with service agencies are utilized to provide preventative maintenance for some major instrument systems to ensure performance and to minimize downtime. Process Area scales are maintained by the Facility Engineering & Maintenance Department [Maintenance and Support Services].

15.0 CONTROL OF NONCONFORMING ITEMS

15.1 Control and Disposition of Nonconformances

Nonconformances of major significance meeting specified criteria are handled in accordance with the Site Procedures SSOP-4006, Occurrence Reports. The handling of all other nonconformances, except of a minor nature (e.g., paperwork inconsistencies easily and quickly resolved), is governed by SSOP-0023, Deviation and Corrective Action Reporting. The system defined in the above include reporting, dispositioning, corrective action, tracking and closeout of nonconformances.

15.2 Special Tags & Labels

Nonconforming items are tagged for identification and control. The control of nonconforming items and use of tags are detailed in written site procedures. Three tags are utilized FS-F-2708 (Figure 10) for nonconformances, and FS-F-2709 (Figure 11) for hold for inspection, and FS-F-2707 for quality accepted (Figure 9).

15.3 Segregation and/or Removal from Operating Status

Where practicable, non-conforming items are physically segregated to preclude inadvertent use. The nonconforming condition is evaluated by cognizant personnel and disposition specified, performed, and verified as complete as a basis for acceptance.

15.4 Documentation

The nonconforming condition is documented on a Deviation Report (DR) form and responsible supervision notified. If necessary, a Corrective Action Report is issued. Once the corrective action(s) are completed, physical corrective action verification is documented and physical control is released. Nonconforming conditions that are not easily and promptly reworked, or require corrective action of the root cause, are processed.

16.0 CORRECTIVE ACTION

16.1 NonConformance Items

Corrective actions on nonconforming items are part of the Deviation and Corrective Action Reporting (DCAR) system. Corrective action is to identify the root cause and preclude recurrence. In response to the request for corrective action, the applicable manager shall detail the underlying (root) cause of the deviation, action to be taken/proposed, and action taken to prevent recurrence. Permanent corrective actions are required to preclude recurrence of significant problems.

16.2 Findings/Recommendations

Findings and recommendations from external audits, internal audits, and internal surveillances require a response within the time period specified by the reviewing organization. Follow-up audits and surveillances, with written dispositions per the DCAR system, are required.

16.3 Exception Requests

Exception requests are required for any envisioned noncompliance to NVO-325 requirements and will be included in the application to ship waste to the NTS. The exemption request shall include:

- the type of exemption requested and the present circumstances that prevent compliance with the criterion for which an exemption is being sought;
- the projected duration of the exemption or reason why the waste cannot be brought into compliance; and
- a plan and schedule for corrective action to bring the waste into compliance with all criteria.

17.0 QUALITY ASSURANCE RECORDS

Records that furnish documentary evidence of quality shall be specified, prepared, and maintained. Records shall be legible, identifiable, and retrievable. Mistakes or corrections in records shall have a single line drawn through the changed data and shall be signed or initialed and dated. Records shall be protected against damage, deterioration, and loss. Requirements, responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented. The waste processing records are identified in Table III and their retention period identified in DOE Order 1324.2.

18.0 AUDITS/WASTE CERTIFICATION

18.1 External

An audit by DOE/NV of FERMCO waste operations is conducted annually as defined in NVO-325. Currently there is no prescribed audit schedule by external organizations other than DOE/NV.

18.2 Internal

Internal overview activities of the waste shipment activities, in addition to the certification activities, are performed as surveillances or internal audits. Surveillance activities are outlined in the process flow diagram, Figure 5. Surveillances are conducted on a periodic basis or real time activities as described in standard operating procedures. These surveillances, conducted by Quality Control and QA, are documented on a surveillance report addressed to responsible management for resolution of observations and findings. All nonconformances are documented on Deviation and Corrective Action Reports. All corrective action responses are evaluated and verified to be acceptable and complete prior to close out of the surveillance.

Internal audits of the LLW shipping program shall be scheduled on basis of evaluation of need. Each audit may concentrate on a particular segment of the operation, but sufficient audits shall be conducted annually to overview the entire program. Each audit is conducted by a team using written checklists. Results of the audit is documented in an audit report addressed to responsible management for written corrective action responses to findings. Nonconformances are documented on Deviation and Corrective Action Reports. Corrective responses are documented, evaluated, and accepted prior to close-out of the audit.

19.0 TRAINING

In compliance with NQA-1, NVO-325, 49 CFR Section 173.1(b), and DOE Order 5480.1A Chapter V, formal training of all personnel directly involved in the waste certification process and preparation of waste shipments shall be conducted. The training shall be documented, updated biannually, and available for inspection by any auditing official.

19.1 Training Program

A Centralized Training Program Manual RM-FMPC-002 establishes requirements for all personnel involved in the development and implementation of performance based training at the FEMP. This manual provides guidance on DOE Order 5480.18, Accreditation of Performance-Based Training for Category A Reactors and Nuclear facilities. Training per this training program complies with NQA-1, NVO-325, and DOE Order 5480.1A Chapter V requirements.

Training shall be designed as a number of performance based modules. Each module contains learning objectives, conditions, and an evaluation to measure the trainee's competence in performing required tasks. Certified instructors from applicable departments shall provide instruction, generate training records, and conduct a biannual evaluation of the effectiveness of the training program. Permanent training records are maintained by the Training Department [Centralized Training Section] of the Administration Division [Industrial, Radiological Safety and Training Department].

19.2 Training Requirements

In compliance with NVO-325, all persons associated with the waste certification program shall be trained in the requirements of this WCPP and NVO-325. All persons who generate, package, certify, prepare data, perform related radiation surveys, or perform the associated quality functions, must have received training in the requirements and implementing procedures for those parts of the certification program in which they are involved. In the absence of specific training courses for specific parts of the certification program, a general training course will be utilized to train personnel identified in the foregoing requirements.

WCOs and WPCs shall receive specialized training on NVO-325, this WCPP, and their certification procedures. They shall be required to pass a proficiency test to qualify for the respective position. Additional training pertaining to environmental compliance and DOT regulations shall be provided commensurate with responsibilities.

The FEMP Remediation Support Operations' Division [Site Services Department] conducts training for personnel directly involved with off-site shipments. Also, there is a training program for safe operation of powered industrial trucks. Remediation Support Operations' Division [Site Services'] training programs are administered by their Training Coordinators who utilizes classroom instructions, demonstrations, and on-the-job training. The program consists of four phases: familiarization, operation, qualifications (written examination and performance tests), and nuclear safety.

19.3 Training Responsibilities

Each FEMP organization is responsible to ensure that their employees are trained per the requirements specified in this Plan. Validation that employees have been trained is the responsibility of each organization with the assistance of the Training Department [Centralized Training]. QA validation of training shall be in the form of surveillances and audits.

TABLE I

MASTER PLANS, MANUALS, AND PROCEDURES

FEMP DIVISION PROCEDURES

Quality Assurance Procedures [Environmental Compliance & Quality Assurance]

*	EQP- 6.04	Qualification of Waste Package Certifiers
*	EQP- 6.05	Qualification of Waste Certification Officials
	EQP- 6.06	Environmental Compliance and Quality Assurance Department Training Plan
	EQP- 7.01	Administration and Conduct of Surveillance
	EQP- 7.05	Participation in Supplier Selection
	EQP- 7.09	Source Surveillance
	EQP- 8.01	Disposition of Supplier Deviations
	EQP- 9.01	Designation, Preparation, Storage and Maintenance of Quality Documents
	EQP-10.01	Root Cause Analysis
*	EQP-12.03	Certification of Waste Package Examination and Sealing for Off-Site Shipment
*	EQP-12.04	Certification of Loading and Shipment of Low-Level Radioactive Waste
	EQP-12.06	Certification of Hazardous Waste Loading, Examination of Transport Vehicle/Trailer for Off-Site Shipment
*	EQP-12.07	Certification of Low Level Waste Shipments to NTS
	EQP-12.08	Certification of Compacted Low Level Waste for Shipment from SEG to NTS
	EQP-14.01	Receiving Inspection

* These documents have been provided as part of the WCPP: all other documents will be provided upon request.

Safety Procedures [Industrial, Radiological Safety and Training]

SP-P-35-009	Radioactive Material Shipping and Receiving
SP-P-35-020	Radiological Survey of Vehicles Entering and Exiting the Controlled Areas of the FEMP

TABLE I
(CONTINUED)

MASTER PLANS, MANUALS, AND PROCEDURES (CONT.)

FEMP DIVISION PROCEDURES (CONT.)

Project Engineering

PMP-424	Construction Waste Handling

Remediation Support Operation Division [Transportation and Support Services]

1-C-305	Baling Scrap Metal Drums
1-C-306	Crushing Metal Drums
1-C-602	Low Level Radioactive Waste (LLRW) Shipment Preparation
1-C-604	Inspection and Evaluation of Containerized Low Level Radioactive Waste (LLRW)
1-C-608	Storage of Radioactive Material
2-C-923	Trash Baler Operation
20-C-600	Overpacking Defective Containers
20-C-604	Control and Utilization of Contaminated Trash Dumpsters
20-C-607	Segregation of Wooden Pallets
20-C-625	Evaluating Low Level Radioactive Waste (LLRW) Bulk Waste Streams for Shipment
20-C-805	Sampling Drummed Waste for Hazard Identification
20-C-912	Checking Scale Operation
M-102	Transportation Requirements Manual
PO-D-006	Calculation of Drum Equivalents for FMPC Waste Volumes
PO-D-035	Shipment of Low Level Radioactive Waste (LLRW) Requirements
PO-S-01-001	Storage and Handling of Empty Low Level Radioactive Waste Containers
PO-S-01-002	Internal Audit Program

TABLE I
(CONTINUED)

MASTER PLANS, MANUALS, AND PROCEDURES (CONT.)

FEMP SITE PROCEDURES

FMPC-0102	Training
FMPC-0302	Request for Purchase
FMPC-0307	Control and Accountability of Nuclear Materials
FMPC-0702	Development and Control of Design
FMPC-0708	Personnel Certification
FMPC-0718	Measuring and Test Equipment Calibration and Control
PP-0314	Packaging, On-Site Movement and Off-Site Shipment of Material
PP-0709	Conduct of Independent Surveillance Activity
PP-0710	Quality Assurance Plans
PP-0721	Test Authorization
PP-5030	Change Proposal Procedure
PP-FMPC-5010	Management of Low-Level Waste (LLW)
SSOP-0045	Identifying Quality Assurance Program Requirements for Quality (RISK) Levels
SSOP-0049	Audit Program
SSOP-0068	Inspection of Procured Material, Equipment, Work in Process and Completed Items
SSOP-0103	FEMP Site Document System
SSOP-0716	Control of Processes

FEMP MANUALS

OM-0003	Test Authorization
RM-0005	FEMP Lot Marking and Color Coding System
RM-0009	Radiological Controls
RM-0012	Quality Assurance Program Description
SM-0001	Risk Assessment and Management (RAM) System Manual

TABLE I
(CONTINUED)

MASTER PLANS, MANUALS, AND PROCEDURES (CONT.)

FEMP PLANS

ANL-SP-1001	Analytical Laboratory Quality Assurance Plan
FD-1000	FEMP Sitewide CERCLA Quality Assurance Project Plan
FMPC-2040	FEMP Waste Management Plan
FMPC-2114	Environmental, Safety, Health and Waste Management Plan
FMPC-2133	FEMP Waste Minimization Plan
FMPC-2185	Sampling Plan for Drummed Waste at the FEMP
PL-FMPC-3006	Materials Control and Accountability Plan
PL-FMPC-3009	Waste Minimization & Pollution Prevention Awareness Plan

FEMP SITE STANDARD OPERATING PROCEDURES

SSOP-0002	Completing the Material Evaluation Form
SSOP-0014	Documentation of a Subject Matter Expert (SME)
SSOP-0018	Processing the Site-Wide Analysis Request/Custody Record for Sample Control
SSOP-0023	Deviation and Corrective Action Reporting
SSOP-0027	Control of Box-Type Containers
SSOP-0036	Quality Assurance Project Plans
SSOP-0044	Management of Soil, Debris, and Waste from a Project
SSOP-0075	Packaging Low Level Radioactive Waste (LLRW) in Drums for Offsite Shipment
SSOP-0078	Packaging Low Level Radioactive Waste (LLRW) into ISO Containers for Offsite Shipment
SSOP-0079	Packaging Low Level Radioactive Waste (LLRW) in Metal Boxes for Offsite Shipment

TABLE II

WASTE PROCESSING - ARCHIVAL DOCUMENTS

DOCUMENT DESCRIPTION

Documents in Table I and Specifications listed in Table VI

Bill of Lading

Item Production/Certification/Identification Card

Laboratory Analysis Reports

Loading Inspection and Tie-down Sheet

Nuclear Materials Shipping Order

Nuclear Materials Transaction Report (DOE-741)

Plant Test Authorization and Reports

Quality Assurance Plans

Radiological Monitoring Records

Tally Sheets

Trailer/Vehicle Checklists

Waste Shipment Final Authorization Checklist

Waste Stream Characterization Data

Weight Tickets

TABLE III

WASTE PROCESSING - QUALITY ASSURANCE RECORDS

RECORDS DESCRIPTION

Audit Reports

Bill of Lading for Waste Shipments

Carrier/Driver Instructions for Radioactive Shipments, and exclusive use.

Inspections and Tests

Item Production/Certification/Identification cards.

Materials Evaluation checklists

Personnel Training Records

Purchase Requisition and Purchase Order documentation

Radiation Monitoring Records

Receipt Inspection of Incoming Materials, including Supplier Certification if applicable

Shipping Order for Nuclear Materials

Surveillance Reports

Tally Sheets

Test and Calibration Records

Transport vehicle inspection records

Waste Certification Checklists

Waste Certification Statements

Waste Certification Program Plan

Waste Stream Characterization Data Records

Weight Tickets

Note: Retention periods are in accordance with DOE Order 1324.2.

TABLE IV

Waste Processing - Measuring and Test Equipment Calibration
(Procedures indicate minimum action when in use)

Accountability Scales (Measures gross and tare weight used to calculate net shipping weight of waste packages.)	Quarterly*
IRS&T Radiological Monitoring Equipment	Semiannual
IRS&T Scintillation Alpha Counters (SAC)	Semiannual*
Laboratory Equipment	Annual*
Laboratory Instruments	Calibration Schedules maintained as specified for the method.
Torque Wrenches Waste Shipping	Quarterly

* Also daily efficiency checks.

TABLE V

WASTE PACKAGING MATERIALS REQUIRING PROCUREMENT CONTROL

MATERIAL DESCRIPTION	DRAWING/SPECIFICATION
48-gallon Metal Drum ("Jug Head" Type)	FERMCO 40X-5500-M-00012-1
55-gallon Metal Drum (17H)	49 CFR 178.118-2 and in accordance with DOE Eval. Document for DOT-7A Type A pkg. MLM-3245 DP/00053-HI
83/85-gallon drums	N/A
Metal Box Shipping Container 40-1/2" H x 57-1/4" W x 81-1/4" L Gusset/Bolt type closure	Container Products Assembly SSB-82.3-5-7A-BRF, Dwg. 01-542-2-01
Metal Box Shipping Container 41" H x 56" W x 80" L Retainer/Bolt type closure	ElectroPanel Dwg. 89DW000800, Rev. 9
Metal Box Shipping Container 42-1/2" H x 55-1/2 W x 79-1/2" L Bolted type closure	FERMCO Dwg. 40X-5500-M-00011
Metal Box Shipping Container 42" H x 54-1/2" W x 80" L Nut & bolt type closure	Galbreath Incorporated 54C
Metal Box Shipping Container 42" H x 55" W x 80" L Nut & bolt type closure	Carolina Container PT188-93
Metal Box Shipping Container 43" H x 53" W x 77" L Clip type closure	FERMCO Dwg. 30A-5500-M-00059
Metal Box Shipping Container 8' H x 8' W x 20' Top Load Clip type closure	FERMCO Dwg. 40X-5500-M-00034
Metal Box Shipping Container 8' x 8' x 20' Top Load Clip type closure	Container Products Dwg. 02-594-2-01
Metal Box Shipping Container 8' x 8' x 20' top load Bolt type closure	Sea Box Inc. Dwg. IS1272
Cargo Container 8-1/2' H x 8' W x 20" L Reconditioned, Front load	N/A

NOTE: The above listing represents basic designs. Future purchases will not necessarily be made to the drawings and/or specifications listed. However, new items procured will be similar, will meet specified requirements, and will receive similar procurement controls.

TABLE VI

WASTE PROCESSING - SPECIFICATIONS

SPECIFICATION DESCRIPTION:

U. S. Department of Energy Nevada Operations Office, "Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements," NVO-325

U. S. Department of Energy, DOE Order 1540.1, "Materials Transportation and Traffic Management."

U. S. Environmental Protection Agency, "Code of Federal Regulations, Title 40, Part 261, Identification and Listing of Hazardous Waste."

U. S. Department of Transportation, "Code of Federal Regulations, Title 10, Section 71, Packaging and Transportation of Radioactive Material."

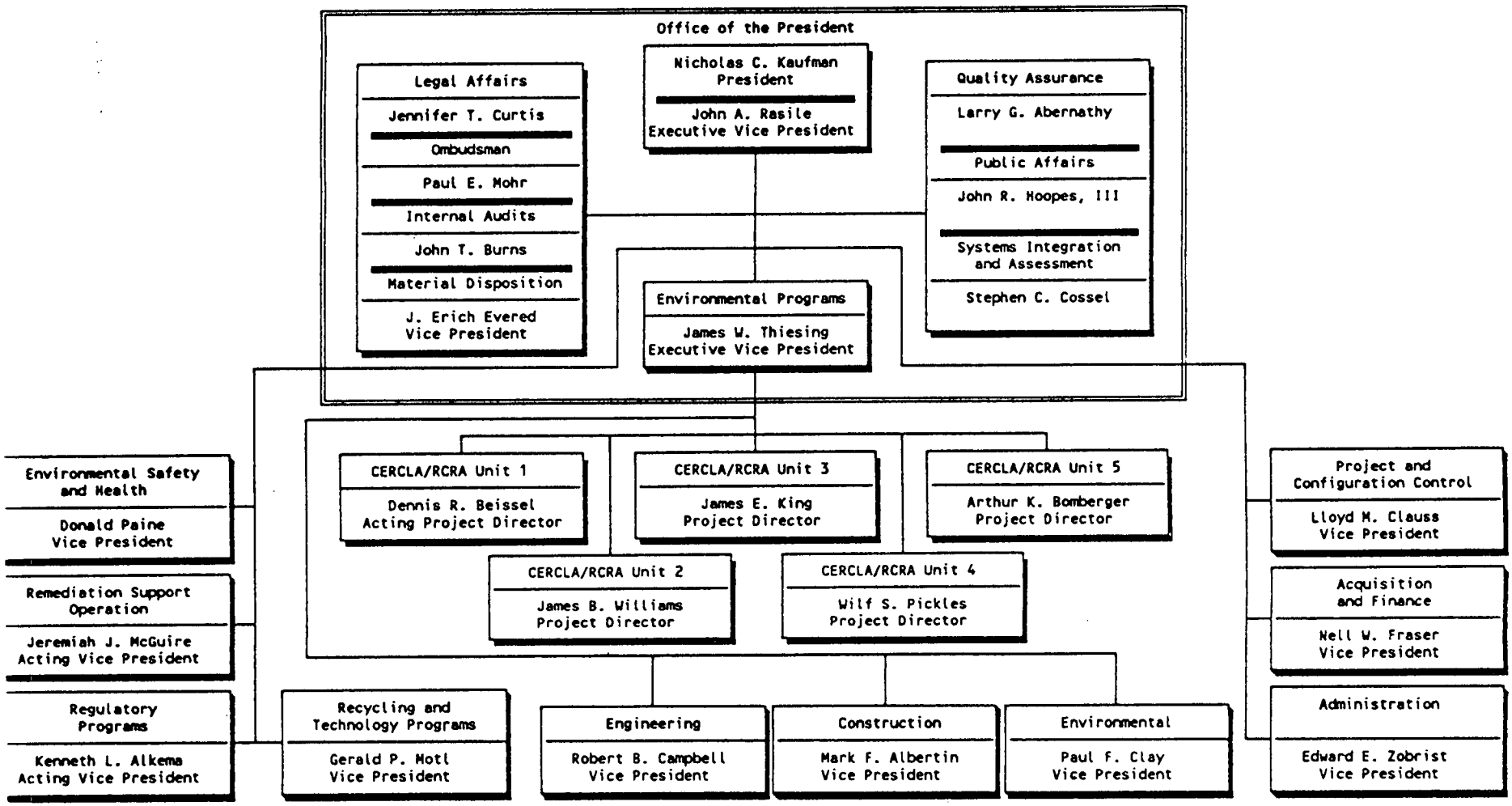
U. S. Department of Energy, ORO 5480.11, "Radiation Protection for Occupational Workers."

U. S. Department of Energy, DOE Order 5700.6C, "Quality Assurance."

U. S. Department of Energy, DOE Order 5820.2A, "Radioactive Waste Management."

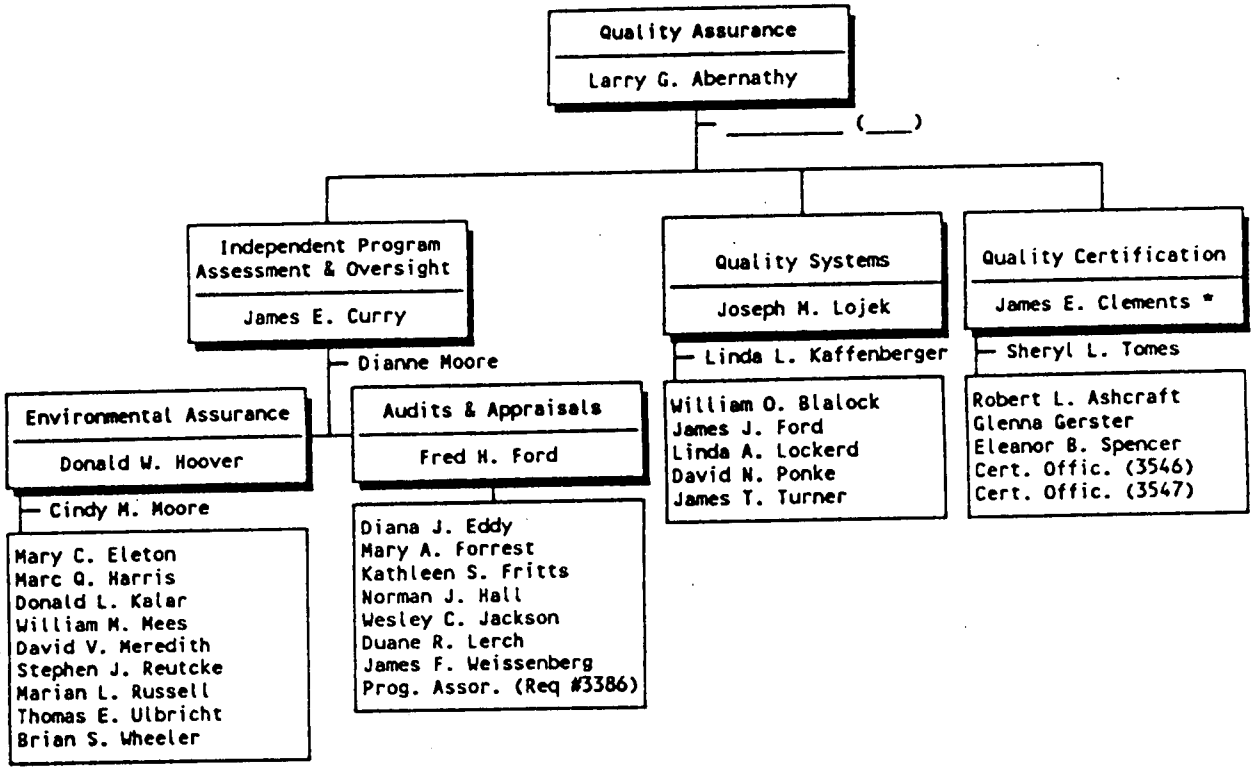
U. S. Department of Transportation, " Code of Federal Regulations, Title 49, Transportation."

FERNALD ENVIRONMENTAL RESTORATION
MANAGEMENT CORPORATION - ADMINISTRATION CHART



(S) INDICATES TEMPORARY OR SUBCONTRACTOR
5/31/93

FERNALD ENVIRONMENT RESTORATION
MANAGEMENT CORPORATION ADMINISTRATION CHART
QUALITY ASSURANCE

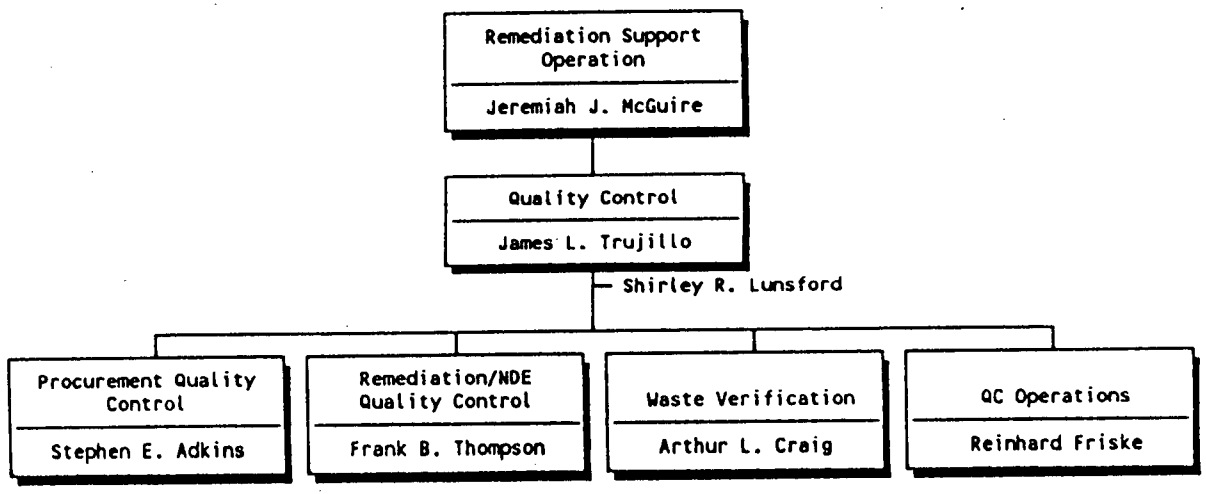


* CHIEF WASTE CERTIFICATION OFFICIAL HAS FULL ACCESS TO THE OFFICE OF THE PRESIDENT TO RESOLVE CERTIFICATION ISSUES.

(S) INDICATES TEMPORARY OR SUBCONTRACTOR
4/30/93

000317

FERNALD ENVIRONMENTAL RESTORATION
MANAGEMENT CORPORATION - ADMINISTRATION CHART
REMEDIATION SUPPORT OPERATION



(S) INDICATES TEMPORARY OR SUBCONTRACTOR
4/30/93

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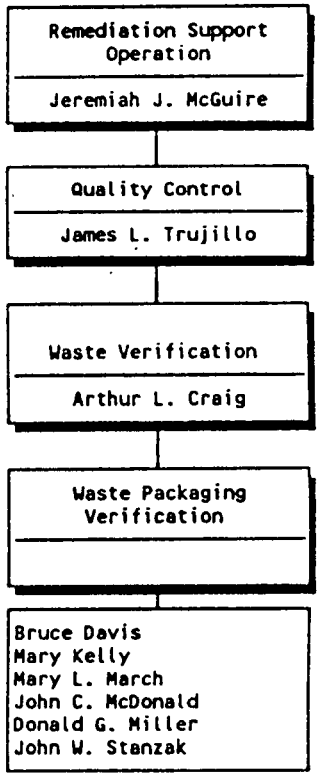
MANAGEMENT CORPORATION - ADMINISTRATION CHART
REMEDIATION SUPPORT OPERATION



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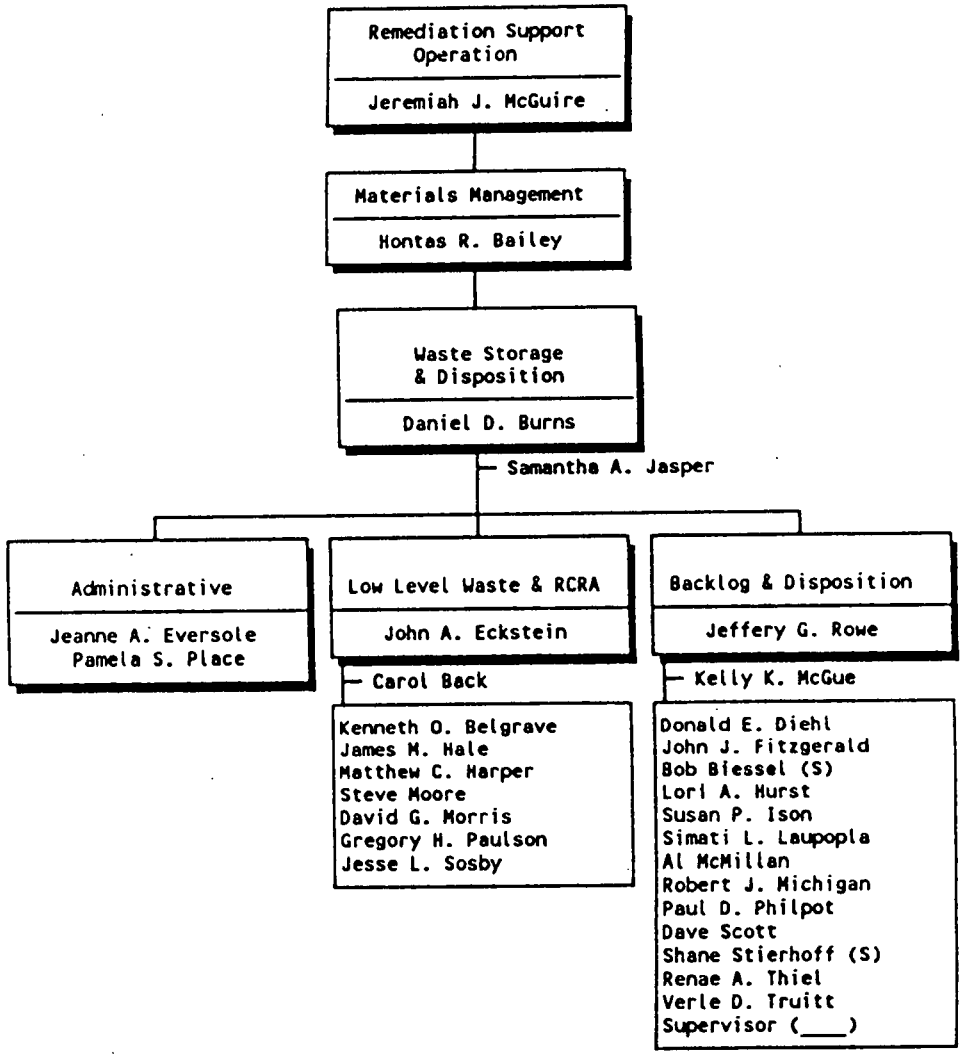
REMEDIATION SUPPORT OPERATION



(S) INDICATES TEMPORARY OR SUBCONTRACTOR
4/30/93

000320

6054

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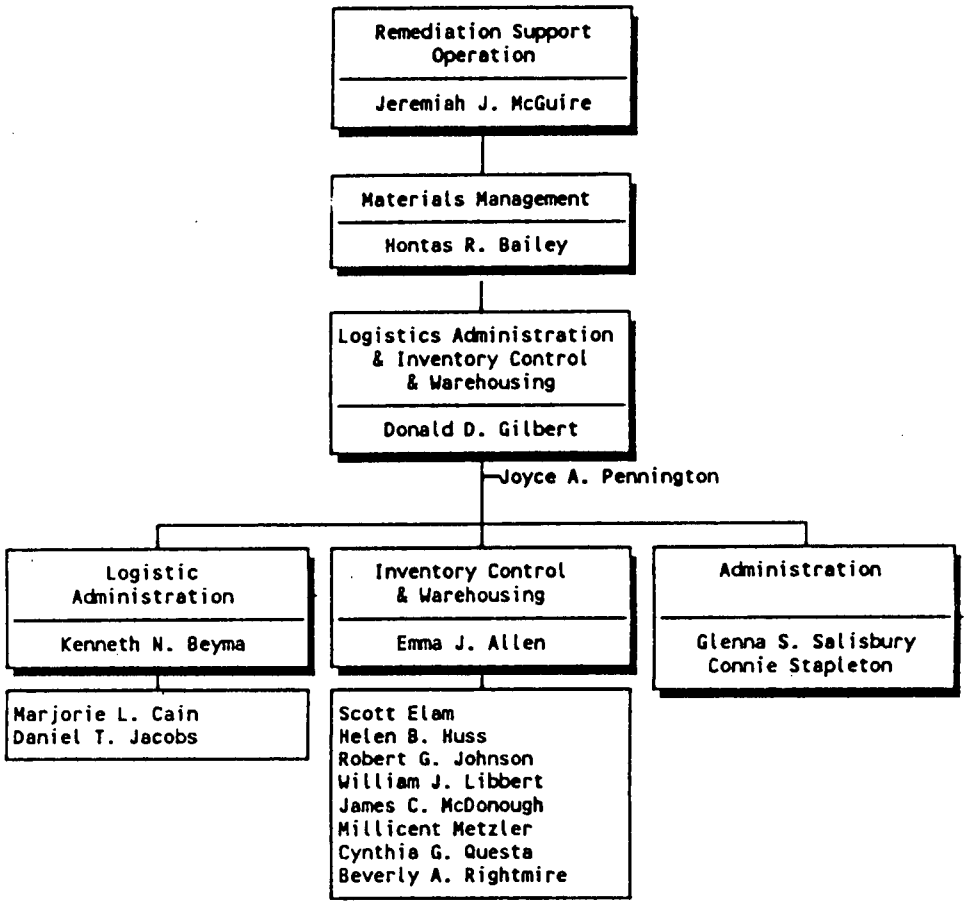
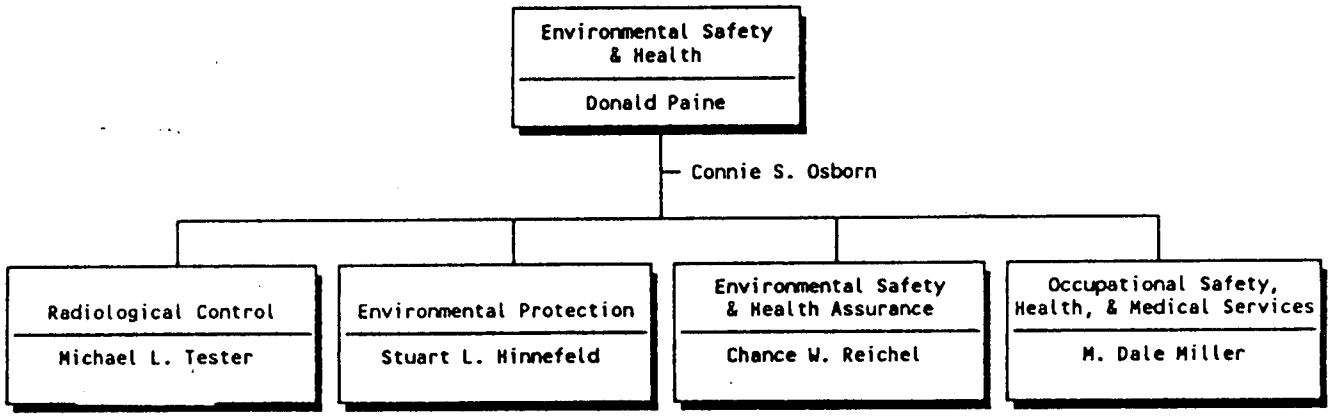
MANAGEMENT CORPORATION - ADMINISTRATION CHART
REMEDIATION SUPPORT OPERATION



(S) INDICATES TEMPORARY OR SUBCONTRACTOR
4/30/93

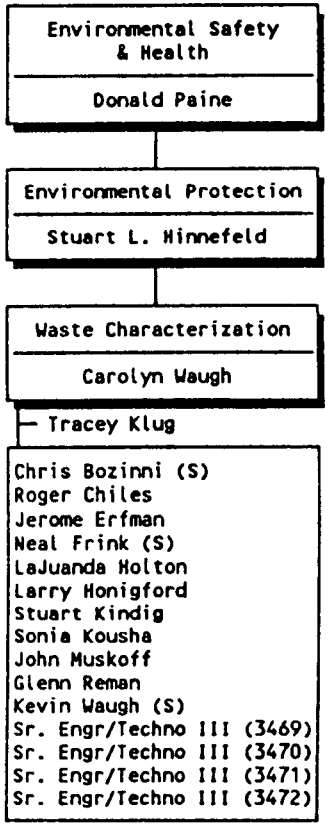
000321

FERNALD ENVIRONMENTAL RESTORATION
MANAGEMENT CORPORATION - ADMINISTRATION CHART
ENVIRONMENTAL SAFETY AND HEALTH



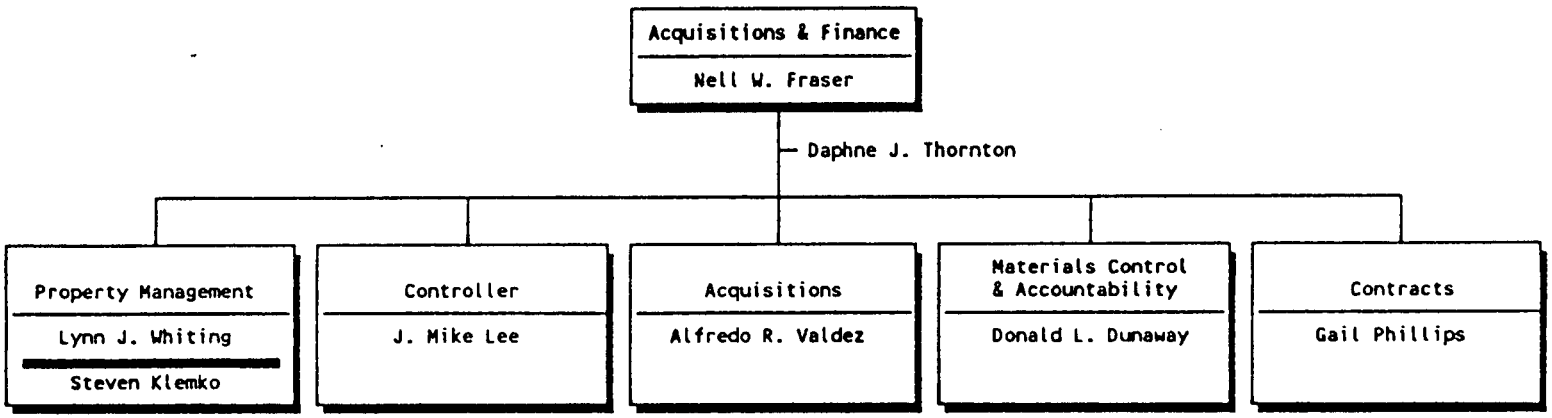
(S) INDICATES TEMPORARY OR SUBCONTRACTOR
3/31/93

FERNALD ENVIRONMENTAL RESTORATION
MANAGEMENT CORPORATION - ADMINISTRATIVE CHART
ENVIRONMENTAL SAFETY AND HEALTH



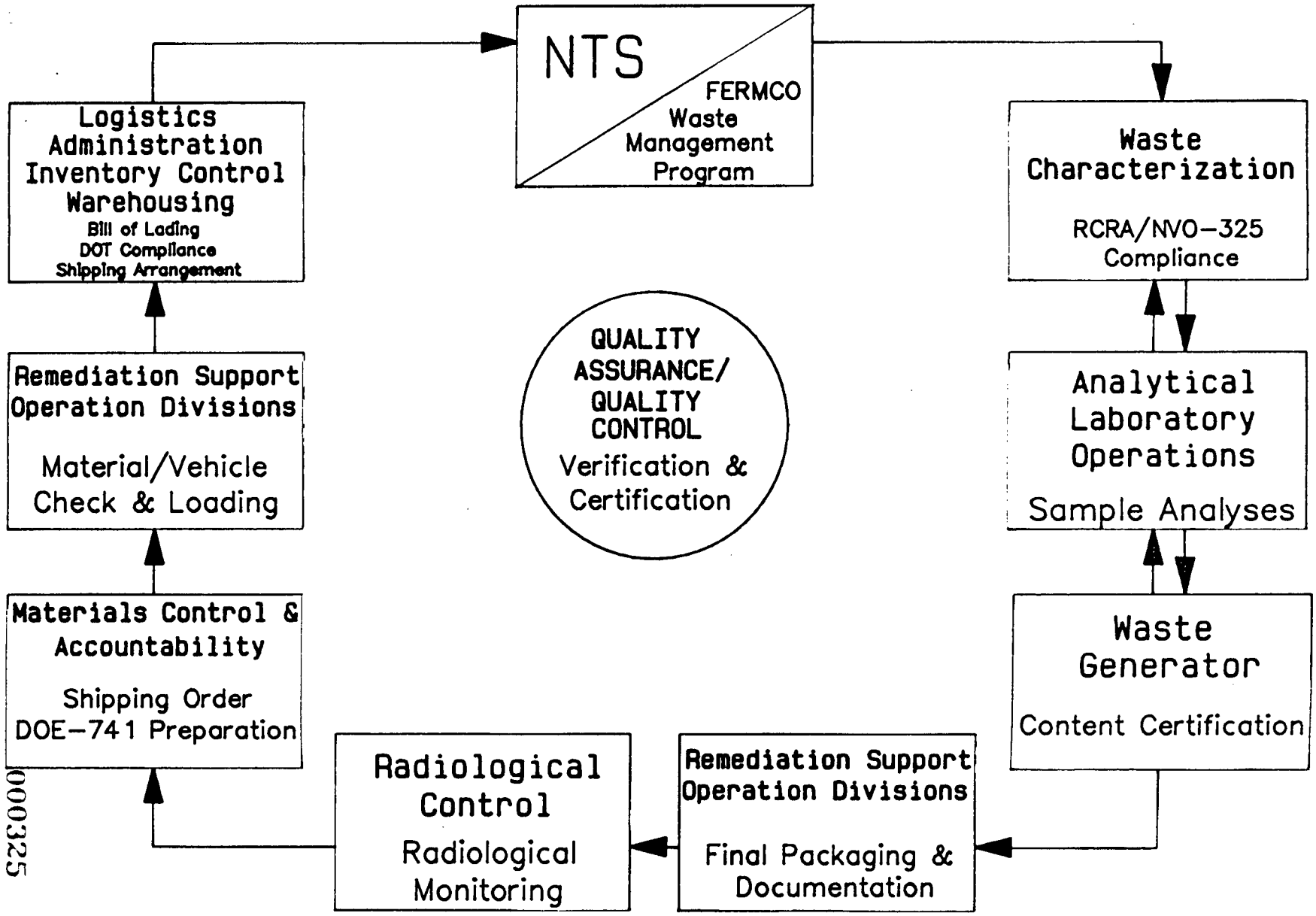
(S) INDICATES TEMPORARY OR SUBCONTRACTOR
3/31/93

FERNALD ENVIRONMENTAL RESTORATION
MANAGEMENT CORPORATION - ADMINISTRATION CHART
ACQUISITIONS AND FINANCE



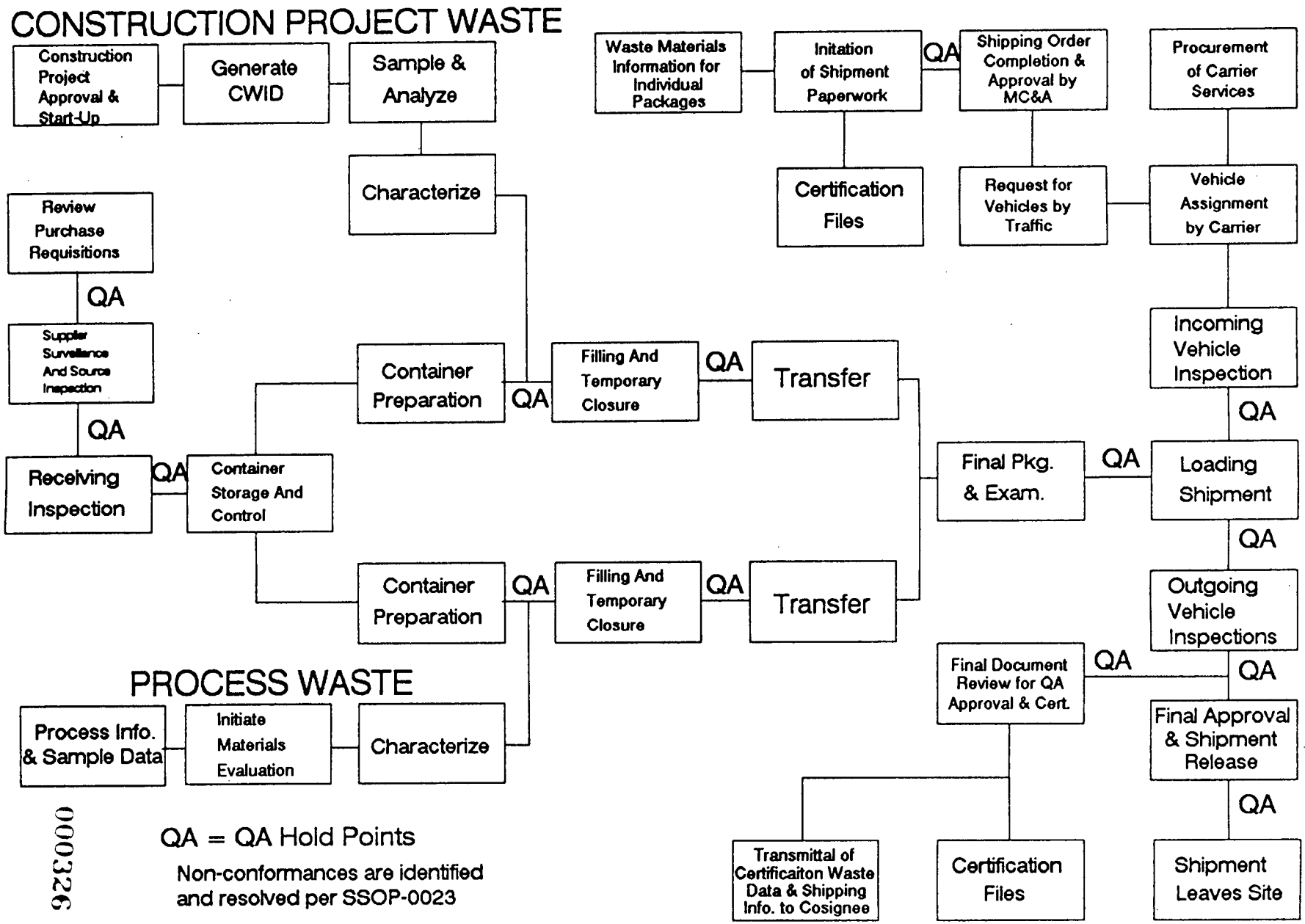
(S) INDICATES TEMPORARY OR SUBCONTRACTOR
4/30/93

Waste Processing Interface



000325

LOW LEVEL WASTE FLOW DIAGRAM



QA = QA Hold Points

Non-conformances are identified and resolved per SSOP-0023

000326

6054

Page 63
Revision 7
Figure 3

If Seal is broken or package damaged - check contents before signing receipt.

******** CHAIN-OF-CUSTODY ********

ANALYS_NUMBER :
CUSTOMER_NUMBER :
CUSTOMER :
DATE_SAMPLED :
SAMPLED_FROM :
MATL_DESCRIPTION :

COMPUTER GENERATED

FMPC-SAMPLE LABEL/RCRA MATERIAL-NORMAL

SAMPLING LOCATION	P.O. NO./ENRICHMENT
COLLECTOR	
TYPE OF MATERIAL	
TYPE OF SAMPLE	
LOT NUMBER OR IDENT	
DATE / TIME / NET WT.	

FMPC FORM 306 M-168 (2-20-91)

TYPICAL PREPRINTED

FERNALD SITE
SITE SERVICES - ANALYTICAL

Form Number: _____ - _____ - _____

SITE-WIDE ANALYSIS REQUEST/CUSTODY RECORD

Page _____ of _____

PROJECT:

☐ PLAN NO.: OR ☐ PROJECT NO.:

PROJECT MANAGER/ENGINEER:

SAMPLER: PHONE:

CHARGE NUMBER: LOT MARKING CODE:

SAMPLER SIGNATURE(S):

SEND RESULTS TO:

FOR SAMPLE RELATED PROBLEMS, CONTACT:

ORGANIZATION:

NAME: PHONE:

SAMPLER REMARKS:

CHECK FOR: ☐ S R LAB ☐ BIO LAB ☐ WTP LAB

SAMPLE SOURCE, DESCRIPTION/IDENTIFICATION, ANALYSIS REGIMEN

	SAMPLE NUMBER	CUSTOMER NUMBER	SAMPLE POINT	MATRIX CODE	COLLECTED DATE	COLLECTED TIME	CONTAINER/ VOLUME	COMPOSITE	GRAB	NO. OF CONTAINERS	ANALYTES CODE - (UNITS CODE)												REMARKS
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME

NO.	DISTRIBUTION OF COPIES
1	LABORATORY
2	REQUESTER
3	SAMPLER

FMPC-SS-3361 (7/10/91)

000329

Fernald
Environmental Restoration
Management Corporation

QUALITY
ACCEPTED

FS-F-2707 (REV. 6/11/93)

Side 1

Fernald
Environmental Restoration
Management Corporation

P.O. Number: _____
Receiving Report No.: _____
Inspection Report No.: _____

Date Inspected: _____

Badge No.: _____

QUALITY
ACCEPTED

FS-F-2707 (REV. 6/11/93)

Side 2

Fernald
Environmental Restoration
Management Corporation

DR No.:_____

DATE: _____

QUALITY NONCONFORMANCE

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FS-F-2708 (REV 6/11/93)

Side 1

QUALITY NONCONFORMANCE

P.O./SHIPMENT/LOT/PACKAGE/CONTAINER I.D. No.: _____

RECEIVING REPORT NO.: _____ INSPECTION REPORT NO.: _____

DESCRIPTION OF NONCONFORMANCE: _____

_____

_____

NAME: _____ BADGE No.: _____ PHONE No.: _____

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FS-F-2708 (REV. 6/11/93)

Side 2

Fernald
Environmental Restoration
Management Corporation

QUALITY
HOLD FOR INSPECTION

TO BE REMOVED BY QUALITY PERSONNEL ONLY

FS-F-2709 (REV 6/11/93)

Side 1

Fernald
Environmental Restoration
Management Corporation

Date Received: _____
P. O. Number: _____
Receiving Report No.: _____
Date Tagged: _____
Badge No.: _____

QUALITY
HOLD FOR INSPECTION

TO BE REMOVED BY QUALITY PERSONNEL ONLY

FS-F-2709 (REV. 6/11/93)

Side 2

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS DEPARTMENT - TRANSPORTATION SECTION

OFFSITE LOADING — TIE DOWN INSPECTION — VEHICLE INSPECTION

Date: _____

COMMODITY:	CARRIER:	TRAILER NO.:	SEAL NO.:
			FA-WMCO

BALE/BOX/DRUM/SEA LAND CONTAINER NUMBERS:

_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____

LSA _____
LSA-RQ _____
LQ _____
LQ-RQ _____
TOTAL _____

DISCREPANCIES DETECTED	CORRECTED		SHIPMENT REJECTED	
	YES	NO	YES	NO

Checked By _____
SIGNATURE - CHECKER

TIE-DOWN INSPECTION AND CHECK-OFF SHEET

INSPECTION ITEM	YES	NO
Wood shoring installed to prevent longitudinal or lateral movement		
Steel strapping around the cargo securing as a stable shipment		
When weight dictates, containers divided into two units, one front and one rear of trailer not exceeding approximately 20,000 pounds each		
1¼" steel strapping utilized (5450 lbs. minimum tensile strength)		
____ each anchor plates or "U" bolts fastened to underframe (____ each side of unit) placed and secured for ____ transverse bands over unit		
Four each brakeman plates or "U" bolts fastened to underframe (two for each band) placed under each unit and secured for two longitudinal bands, securing the boxes/skids into one tight unit, anchored to the floor of the trailer		
Two Signode seals No. 107 crimped whenever two bands are used on an end over end lap joint		
Anchor and brakeman plates secured with eight each 2" nails		
Sea Land Containers ..... 4 each nylon straps		
..... Chains		
..... 2 X 4s		

VEHICLE INSPECTION REPORT

CONDITION	PASS	FAIL	CONDITION	PASS	FAIL	CONDITION	YES	NO
Condition of Floor			Condition of Sides			Detected Sabotage Devices		
Condition of Interior			Condition of Exterior					
Condition of Roof			Condition of Rear Doors			Detected Evidence of Sabotage		

Overall appearance: _____ _____

General Comments: _____ _____

Accepted: _____ Rejected: _____

Checked By: _____
SIGNATURE - TRANSPORTATION SUPERVISOR

NO.	DISTRIBUTION OF COPIES
1	Transportation Section (RECORD COPY)

FMPC-SAML-2496 (REV. 4/5/88)

Fernald Site
PRELIMINARY VISUAL TRAILER INSPECTION

CARRIER	TYPE TRAILER	TRAILER NUMBER

CHECKLIST			DISCREPANCIES—COMMENTS
1. Inspect the following on trailer prior to driver unhooking:			2. Discrepancies that need to be brought to the attention of the Garage Supervisor and FS&S:
ITEM	ACCEPT	REJECT	
Lights			
Cross Member			
U Bolts & Springs			
Torque Arms			
Rims & Nuts			
Brake Lines & Shoes			
Tires			
Wheel Seals			

Comments: _____

Signed: _____ Badge No.: _____ Date: _____

DISTRIBUTION: QA VERIFICATION
Facility Services & Support

FS-F-3344 (REV. 1/17/92)

For Waste Generated Prior to April 1, 1993

CARD XX **ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION** 129545

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DAY	YEAR	SHIFT	BADGE NO.	PACKAGE NO.

SEAL NUMBER	SEAL DATE MONTH	DAY	YEAR

WASTE DESCRIPTION AND COMMENTS

PACKAGE TYPE	
PACKAGE SIZE	

PACKAGE PHYSICAL CERTIFICATION	YES	NO
EMPTY CONTAINER AT START		
RUST HOLES OR DENTS		
MATERIAL IS AS CODED		
PROHIBITED MATERIALS		
LIQUIDS IN CONTAINER		
MINIMUM OF VOID SPACE		
PACKAGE SECURED		
DRAIN PLUG SECURED		

PLANT	PROD. MBA
PLANT TO	MBA TO

GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FMPC-CONT-1945-XX (REV. 12/19/88)

*U.S. GPO: 1990-749-781

New Card Effective April 1, 1993

INV. NO.:

CARD 65-1 **ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION**

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DAY	YEAR	SHIFT	BADGE NO.	CONT. NO.	SERIAL NO.

SEAL NUMBER	SEAL DATE MONTH	DAY	YEAR

WASTE DESCRIPTION AND COMMENTS

PACKAGE TYPE	
PACKAGE SIZE	
PROJECT	

PACKAGE PHYSICAL CERTIFICATION	YES	NO
EMPTY CONTAINER AT START		
RUST HOLES OR DENTS		
MATERIAL IS AS CODED		
PROHIBITED MATERIALS		
LIQUIDS IN CONTAINER		
MINIMUM OF VOID SPACE		
PACKAGE SECURED		
DRAIN PLUG SECURED		
OVERPACK		
REPACK		

PLANT	PROD. MBA	MEF NO.
DCAR	SURV. NO.	GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FS-F-1945-1 (REV. 11/20/92)

☆U.S. GPO:1992-751-382

CERTIFICATION STATEMENT

LOW-LEVEL WASTE SHIPMENT FROM FEMP TO NEVADA TEST SITE

Bill of Lading No. _____	Seal Number(s) _____
Trailer No. _____	_____

I certify that the containers in Shipment No. WML _____ as listed on the attached Package Storage & Disposal Data report do not contain hazardous waste as defined in Title 40 CFR 261 or OAC 3745-54 hazardous waste regulations:

(1) according to the results of tests performed in accordance with the requirements as specified in Subpart C of Title 40 CFR 261; and/or

(2) according to the supporting documentation provided to me about the materials and processes that produced the waste.

To the best of my knowledge, I believe the information I have submitted is true, accurate, and complete.

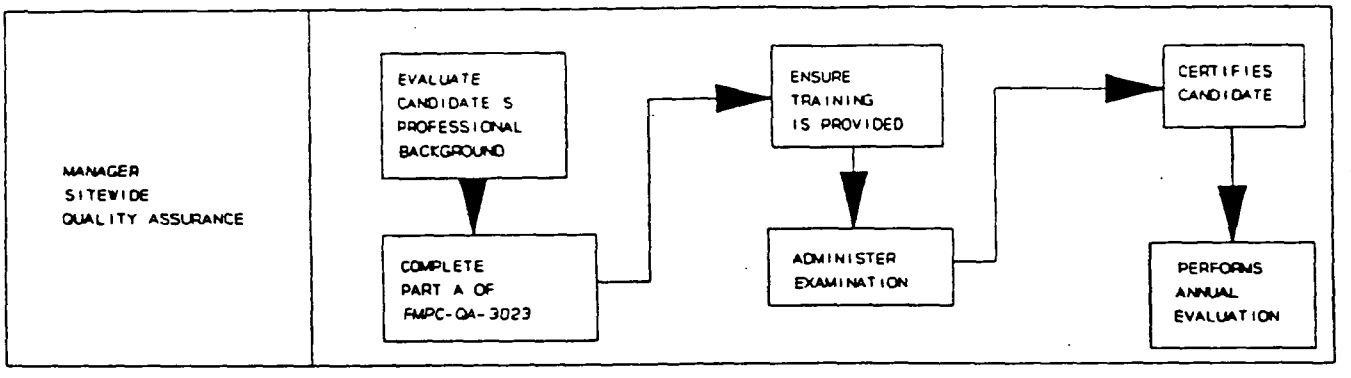
_____
FEMP Waste Certification Official

Date: _____

WCPP/SOPs

1.0 SCOPE

To define the system utilized by the Westinghouse Materials Company of Ohio for evaluating and documenting the certification of individuals as Waste Package Certifiers. This procedure covers FMPC personnel who certify that individual packages of radioactive, hazardous, and mixed waste which are consolidated to compose an off-site shipment, comply with all applicable requirements and meet the acceptance criteria of the receiver. Qualification to perform other specialized verification activities is also documented using this procedure.



2.0 PROCEDURE

2.1 General:

2.1.1 Certification of individuals under this procedure is accomplished through review and consideration of professional expertise, demonstrated skills, required training, and proficiency examination. This review will be conducted by the Manager of Sitewide QA with the assistance of the Manager, Quality Certification and documented on form FMPC-Q&S-3024 (Attachment A).

2.1.2 Part B of Form FMPC-Q&S-3024 is specific to waste package type, point of origin and repository or disposal facility. Only one Part A is completed per candidate. More than one Part B may be required for an individual.

2.1.3 For abbreviations, acronyms and definitions see EQP-1.05.

2.2 Evaluation of Candidate

Manager Sitewide QA/Designee:

2.2.1 Evaluate the candidate's professional background to determine if it sufficient to provide the general knowledge and experience required and documents this evaluation on form FMPC-Q&S-3024 Part A.

2.2.2 Utilize the following point system to evaluate the candidate in four areas: The prospective candidate shall have verifiable evidence that a minimum of five (5) points have been earned.

a. Education: (3 points maximum) 6054

- Associate degree from an accredited institution - 1 point. If in engineering, physical science, QA or math - 2 points.

- Bachelors degree from an accredited institution - 2 points. If in engineering, physical science, QA or math - 3 points.

b. Experience (5 points maximum)

Technical experience in engineering, operations, or laboratory analysis: Score (one) 1 point for each full year to a maximum of three (3) points for this aspect of experience.

- If two (2) or more years of this experience have been in the nuclear field, score one (1) additional point; or

- If two (2) or more years of this experience have been in the radioactive or hazardous waste field, score two (2) additional points.

c. Management Judgement (2 points maximum)

Award up to two (2) points for other performance factors applicable to waste operations which may not be explicitly called out in this section. Examples of these factors are leadership, sound judgement, maturity, analytical ability, tenacity, past performance, waste training courses.

d. Surveillance Skills

Perform an evaluation of a candidate's ability to observe waste packaging and loading operations, identify nonconforming conditions, and obtain resolution to prevent recurrence.

2.2.3 Complete Part A of Form FMPC-Q&S-3024.

2.3 Specific Certification Authority

2.3.1 General

a. In order to be certified for a waste package type the candidate must understand and be able to verify the requirements unique to that package type and the acceptance criteria unique to the repository, treatment, or disposal facility.

b. Specific verification skills include specialized areas of expertise, such as vehicle inspection. Understanding of applicable standards and FMPC requirements is necessary.

2.3.2 Required Training

Manager, Sitewide QA/Designee:

a. Ensure required training is consistent with the scope of authority. The following as applicable, will be covered as a minimum:

1. Receiver Waste Acceptance Criteria
2. Applicable SOP's
3. Applicable QAP's

2.3.3 Specific Examination

Manager, Sitewide QA/Designee:

a. Administer a closed book, proctored exam to each prospective candidate prior to certification. The exam will consist of questions selected from the documents listed under the REQUIRED TRAINING section of Part B Form FMPC-Q&S-3024 (Attachment A). A grade of 80% will be considered as passing.

2.3.4 CERTIFICATION

Manager, Sitewide QA/Designee:

a. Certify candidate only after satisfactory completion of qualification requirements and examination by signing and dating the Certified by block of Part B Form FMPC-Q&S-3024.

2.4 MAINTENANCE OF QUALIFICATION

Manager, Sitewide QA/Designee:

2.4.1 Perform an annual reevaluation of each Package Certifier. Qualification may be extended, retraining may be required, or requalification may be necessary. This reevaluation shall consist of a review of the original certification documentation and additional supporting documentation accumulated during the annual period.

2.4.2 Document the annual reevaluation by initialing and dating the annual reevaluation block on Part B of Form FMPC-Q&S-3024.

3.0 REFERENCES

3.1 EQP-1.05, Abbreviations, Acronyms, and Definitions

4.0 ATTACHMENTS

4.1 Attachment A, Page 1 of 2 - Waste Package Certifier Qualification, Form FMPC-Q&S-3024 Part A (8/31/89)

4.2 Attachment A, Page 2 of 2 - Waste Package Certifier Qualification Form Specific Certification Authority, Form FMPC-Q&S-3024 Part B (8/31/89)

ATTACHMENT A
PAGE 1 OF 2

WASTE PACKAGE CERTIFIER QUALIFICATION FORM

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Westinghouse Materials Company of Ohio
WASTE PACKAGE CERTIFIER QUALIFICATION FORM
PART A

EMPLOYEE NAME:	BADGE NUMBER:

PROFESSIONAL		
EDUCATION		(3 POINTS MAX)
EXPERIENCE		(5 POINTS MAX)
SPECIAL TRAINING		(2 POINTS MAX)
MANAGEMENT JUDGEMENT		(2 POINTS MAX)
TOTAL POINTS	PACKAGE CERTIFIER MINIMUM - 5 POINTS	TOTAL POINTS

SURVEILLANCE SKILLS

EVALUATED BY:	NAME & TITLE:	DATE:

FMPC-O&S-3024 PART A (8/31/88)

ATTACHMENT A
PAGE 2 OF 2

WASTE PACKAGE CERTIFIER QUALIFICATION FORM
SPECIFIC CERTIFICATION AUTHORITY

Westinghouse Materials Company of Ohio
WASTE PACKAGE CERTIFIER QUALIFICATION FORM
SPECIFIC CERTIFICATION AUTHORITY (PART B)

EMPLOYEE NAME:	BADGE NUMBER:
PACKAGE TYPE:	
LOCATION(S): OR SPECIAL AREA EXPERTISE:	

REQUIRED TRAINING

TOPIC	DATE	TOPIC	DATE

SPECIFIC EXAMINATION

	NAME:	GRADE:	DATE:
ADMINISTERED BY:			

QUALIFICATION CERTIFIED

	NAME & TITLE:	DATE:
CERTIFIED BY:		

ANNUAL RE-EVALUATION

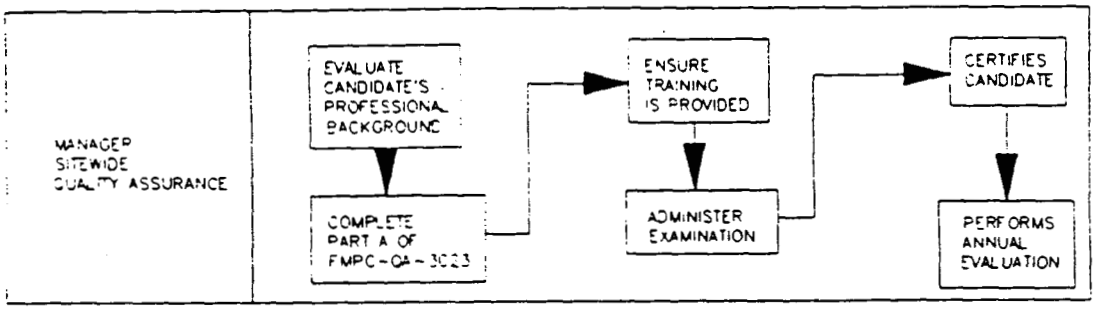
/ /		/ /		/ /	

FMPC-085-3024 PART B (8/21/89)

WESTINGHOUSE MATERIALS COMPANY OF OHIO - FMPC NON-CONTROLLED COPY		DOCUMENT NUMBER: EQP-6.05
ENVIRONMENTAL QUALITY PROCEDURE	SUBJECT: QUALIFICATION OF WASTE CERTIFICATION OFFICIALS 6054	REVISION: 0
		Page 1 of 5
	AUTHORIZED: (Manager, Environmental Compliance & Quality Assurance) Ellery D. Savage	Effective Date: 05/30/91

1.0 SCOPE

To define the system utilized by the Westinghouse Materials Company of Ohio for evaluating and documenting the certification of individuals as Waste Certification Officials. This procedure covers FMPC personnel who certify that outgoing radioactive, hazardous, and mixed waste shipments comply with all applicable requirements and meet the acceptance criteria of the receiver.



2.0 PROCEDURE

2.1 General:

2.1.1 Certification of individuals under this procedure is accomplished through review and consideration of professional expertise, demonstrated skills, required training, and proficiency examination. This review will be conducted by the Manager of Sitewide QA with the assistance of the Manager of Quality Certification and documented on form FMPC-QA-3023 (Attachment A).

2.1.2 Part B of Form FMPC-QA-3023 is specific to waste type, point of origin and repository or disposal facility. Only one Part A is completed per candidate. More than one Part B may be required for an individual.

2.1.3 For abbreviations, acronyms and definitions see EQP-1.05.

2.2 Evaluation of Candidate

Manager, Sitewide QA/ Designee:

2.2.1 Evaluates the candidate's professional background to determine if it is sufficient to provide the general knowledge and experience required and documents this evaluation on form FMPC-QA-3023 Part A.

2.2.2 Utilizes the below point system to evaluate the candidate in four areas: The prospective candidate shall have verifiable evidence that a minimum of ten (10) points for a Certification Official have been earned

a. Education: (4 points maximum)

- o Associate degree from an accredited institution - 1 point
  If in engineering, physical science, QA or math - 2 points
- o Bachelors degree from an accredited institution - 2 points
  If in engineering, physical science, QA or math - 3 points
- o Masters degree from accredited institution - 1 additional point

b. Experience (9 points maximum)

- o Technical experience in engineering, operations, or laboratory analysis: Score (one) 1 point for each full year to a maximum of five (5) points for this aspect of experience.
- o If two (2) or more years of this experience have been in the nuclear field, score one (1) additional point; or.
- o If two (2) or more years of this experience have been in the nuclear waste field, score three (3) additional points; or.
- o If two (2) or more years of this experience have been in the waste certification field (i.e. as a package certifier) score four (4) additional points.

c. Surveillance Skills

Performs an evaluation of a candidate's ability for observing waste packaging and loading operations, identifying nonconforming conditions and in achieving resolution to prevent recurrence.

d. Rights of Management (2 points maximum)

Awards up to two (2) points for other performance factors applicable to waste operations which may not be explicitly called out in this section. Examples of these factors are leadership, sound judgement, maturity, analytical ability, tenacity, past performance, waste training courses.

2.2.3 Complete Part A of Form FMPC-QA-3023.

2.3 Specific Certification Authority

2.3.1 General

In order to be certified as a Waste Certification Offical the candidate must understand and be able to apply the requirements unique to the waste type and the acceptance criteria specific to the repository, treatment, or disposal facility.

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2.3.2 Required Training

Manager, Sitewide QA/ Designee:

a. Ensure required training is consistent with the scope of authority. The following as applicable, will be covered as a minimum:

1. Receiver Waste Acceptance Criteria
2. Applicable QAP's
3. Applicable DOT Standards

2.3.3 Specific Examination

Manager, Sitewide QA/ Designee:

a. Administer a closed book, proctored exam to each candidate prior to certification. The exam will consist of questions selected from the documents listed under the REQUIRED TRAINING section of Part B Form FMPC-QA-3023 (Attachment A). A grade of 80% will be considered as passing.

2.3.4 CERTIFICATION

Manager, Sitewide QA/ Designee:

a. Certify candidate only after satisfactory completion of qualification requirements and examination by signing and dating the Certified by block of Part B Form FMPC-QA-3023.

2.4 MAINTENANCE OF QUALIFICATION

Manager, Sitewide QA/ Designee:

2.4.1 Perform an annual reevaluation of each Certifying Official. Qualification may be extended, retraining may be required, or requalification may be necessary. This reevaluation shall consist of a review of the original certification documentation and additional supporting documentation accumulated during the annual period.

2.4.2 Document the annual reevaluation by initialing and dating the annual reevaluation block on Part B of Form FMPC-QA-3023.

3.0 REFERENCES

3.1 EQP-1.05, Abbreviations, Acronyms, and Definitions

4.0 ATTACHMENTS

4.1 Attachment A - Waste Certification Official Qualification Form Part A & B.

ATTACHMENT A
PAGE 1 OF 2

Westinghouse Materials Company of Ohio

WASTE CERTIFICATION OFFICIAL QUALIFICATION FORM

PART A

EMPLOYEE NAME:	BADGE NUMBER:

PROFESSIONAL		
EDUCATION		(4 POINTS MAX)
EXPERIENCE		(9 POINTS MAX)
SPECIAL TRAINING		(2 POINTS MAX)
MANAGEMENT JUDGEMENT		(2 POINTS MAX)
TOTAL POINTS	CERTIFICATION OFFICIAL MINIMUM - 10 POINTS	TOTAL POINTS

SURVEILLANCE SKILLS

	NAME & TITLE	DATE
EVALUATED BY:		

6054

Westinghouse Materials Company of Ohio
WASTE CERTIFICATION OFFICIAL QUALIFICATION FORM
SPECIFIC CERTIFICATION AUTHORITY (PART B)

EMPLOYEE NAME:	BADGE NUMBER:
WASTE TYPE:	
DESTINATION:	

REQUIRED TRAINING

TOPIC	DATE	TOPIC	DATE

SPECIFIC EXAMINATION

	NAME	GRADE	DATE
ADMINISTERED BY:			

QUALIFICATION CERTIFIED

	NAME & TITLE	DATE
CERTIFIED BY:		

ANNUAL RE-EVALUATION

/ /		/ /		/ /	

Westinghouse Materials Company of Ohio

WASTE CERTIFICATION OFFICIAL QUALIFICATION FORM
SPECIFIC CERTIFICATION AUTHORITY (PART B)

EMPLOYEE NAME:	BADGE NUMBER:
WASTE TYPE:	
DESTINATION:	

REQUIRED TRAINING

TOPIC	DATE	TOPIC	DATE

SPECIFIC EXAMINATION

ADMINISTERED BY:	NAME:	GRADE:	DATE:

QUALIFICATION CERTIFIED

CERTIFIED BY:	NAME & TITLE:	DATE:

ANNUAL RE-EVALUATION

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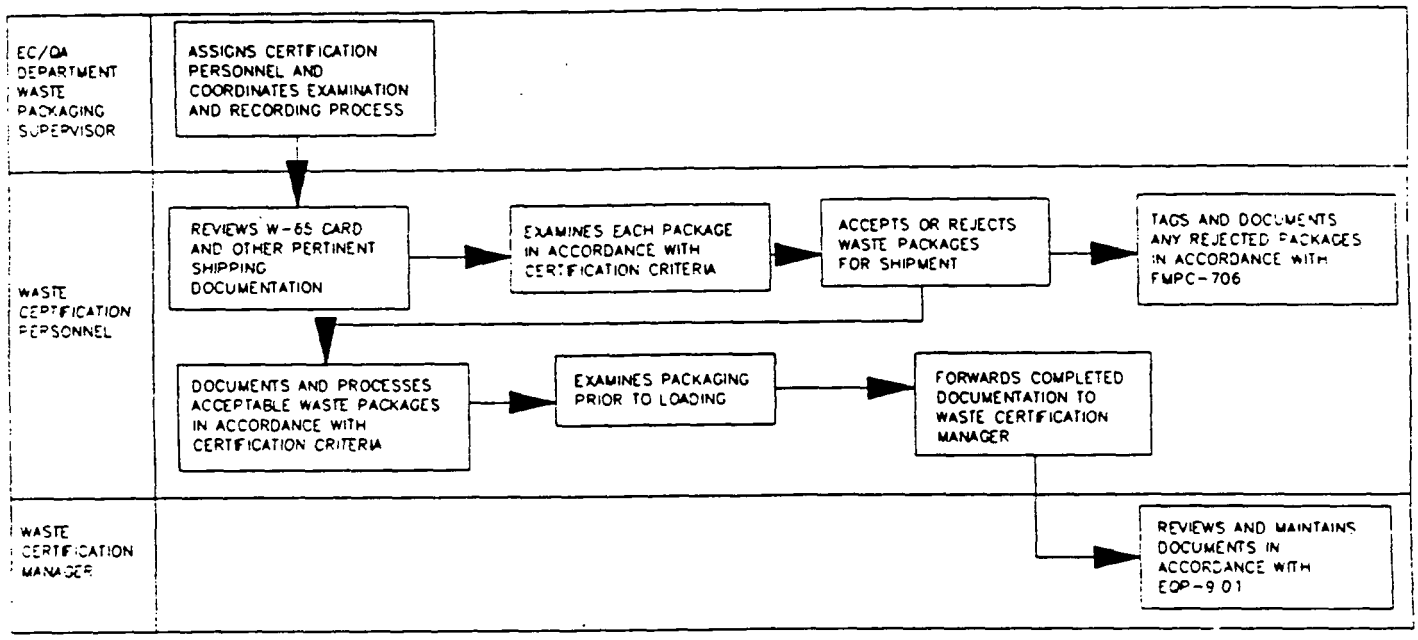
1.0 SCOPE

This procedure outlines the method for the certification of waste materials at the Feed Materials Production Center (FMPC) (for additional abbreviations, acronyms, and definitions refer to EQP-1.05) prior to offsite shipment, and is applicable to Low-Level Radioactive Waste (L-LRW) only.



2.0 PROCEDURE

2.1 Industrial Health and Safety Requirements

2.1.1 Leather palm gloves shall be worn by when handling sharp-edged or abrasive materials, containers, lids, and banding materials.

2.1.2 Safety glasses shall be worn by all personnel at all times in the process area, except when another type of eye protection equipment is specified.

2.1.3 A half-mask respirator equipped with radionuclide (purple) cartridges as specified by the Radiological Safety (RS) Technician shall be available for each person working with waste material and shall be used at the direction of the RS Technician.

2.1.4 Any circumstances of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake RS for evaluation. The involved personnel shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample.

2.1.5 Spill incidents involving RCRA materials shall be reported to the Spill Reporting Advisor in Environmental Compliance in accordance with Site Procedure FMPC-503, "FMPC Spill Incident Reporting and Cleanup."

2.2 General Requirements for Packaging L-LRW

2.2.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) be trained and qualified on this procedure, NVO-325, and the Waste Certification Program Plan in accordance with EQP-6.04, Qualification of Waste Package Certifiers, or on EQP-6.05, Qualification of Waste Certification Officials.

2.2.2 Materials prohibited by NVO-325 and listed on the Prohibited Materials List (Attachment A) shall not be packaged for shipment.

2.2.3 Only materials approved by the NTS, Solid Waste Compliance and Waste Management shall be shipped. The Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.2.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.2.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.431 and 173.425.

2.2.6 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

2.2.7 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Certification personnel and recertified on the basis of the reexamination results.

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2.3 Examination of Metal Drums Prior to Filling

Metal drum examination by Certification prior to filling is not a routine requirement, but may be performed on an audit basis as follows:
Physical Inspection - 50% of lot
W-65 Card comparison - 10% of lot
W-65 Card check for completeness and accuracy - 100% of lot
Results of examination shall be documented with an appropriate check list and signed by Certification personnel performing the examination. Criteria for examination shall include as a minimum:

2.3.1. Except for light rust, drum must be clean and empty.

2.3.2. Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)
g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.4 Examination of Metal Drum Filling

The filling of drums with low level radioactive waste materials shall be monitored by Certification personnel. The results of examination shall be documented on the "Waste Certification Examination Report 'Drum Filling'", QAC-881115-5 (Attachment B), and signed by those performing the examination. As a minimum, the examination shall include:

2.4.1 Visual verification that the materials packaged conform in appearance to the materials listed on the waste generator's certification record (currently W-65 card, FMPC-CONT-1945-XX, Attachment C).

2.4.2 If material is a respirable fine, verify that double containment is used in packaging.

2.4.2.1 Plant 8 residues shall be packaged in 48-gallon jug head type lever lock drum, sealed with a sequentially numbered wire seal, and contained in a 55-gallon bolt closure type overpack drum.

2.4.2.2 Other miscellaneous materials may be overpacked with double containment, provided neither container will leak in normal handling and transport.

NOTE: As of the date this procedure is issued, approval has not been received to resume shipment of asbestos to the NTS. Also, there is no assurance that when and if shipment is resumed that asbestos in drums will be acceptable.

2.4.3 Verify that numbered seals are being used to secure inner containers.

2.4.4 Verify that bolt ring closure is used on outer drum, flange is in down position, and lid is secure. (If in doubt, grasp bolt ring with gloved hand and generate movement to determine if ring is loose.)

2.5 Examination of Metal Drums Prior to Loading Trailers For Transfer to Plant 1 (Waste Operations)

Examine packaged drums prior to loading on trailers for transfer to the Plant 1 Area. These drums are to be examined 100% on a best effort basis, and responsibility shall not be waived without the approval of Sitewide QA who shall notify Operations and Waste Management supervision of Certification's inability to perform the examination.

2.5.1. Receives the "Item Production/Certification/Identification" card FMPC-CONT-1945-XX (W-65 Card, Attachment C)

2.5.2 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.5.3 Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)

g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.5.4 Complete "Waste Certification Examination Report 'Prior to Transfer'", QAC-881115-3 (Attachment D). 6054

2.6 Examination of Wood Boxes Prior to Filling

On an occasional basis, wood boxes will be examined prior to filling to verify compliance. The examination shall be documented on a checklist, and shall include verification of the following:

2.6.1 The box design is approved for shipment to NTS.

2.6.2 The box is not damaged or seriously deteriorated (i.e. rot).

2.6.3 The box is free of holes, splits, or voids between plywood panels and framework.

2.6.4 The box is free of protruding fasteners.

2.6.5 The box is labeled, on opposite sides, with the manufacturer's name and shipping box serial number.

2.6.6 Lids, if in place, fit securely into the top recesses of the box and are free of severe warping, and voids.

2.6.7 Each box has three (four if the large 124 cu. ft. box) 1-1/4" width straps equidistant and horizontally around the perimeter.

2.6.8 Each box has a preformed plastic or 6-mil (0.006") sheet plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

2.6.9 Each box has a minimum of one 50 lb. bag of uncalcined diatomaceous earth (Dicalite) spread evenly in the bottom of the box, or an absorbent pad, covering the liner in the bottom of the box.

2.7 Monitoring of Wood Box Filling Prior to Closure

Wood box filling is to be monitored occasionally to verify compliance. Observance may include the filling process, or may only include observance after filling prior to closure. The results of the monitoring shall be documented on a checklist and shall verify the following:

2.7.1 A prohibited materials list is displayed in the loading area.

2.7.2 Box has a 6 mil (0.006") sheet plastic or a preformed plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

NOTE: A plastic liner is not required if box is being loaded with heavy metal items.

2.7.3 When loading with heavy items, floor seams and one foot up each corner are caulked.

2.7.4 Box contents agrees with documentation on FMPC-CONT-1945-XX (W-65 card, Attachment C).

2.7.5 No prohibited items are being or have been packaged.

NOTE: Depending on the contents, all materials in a filled package may not be visible. The examiner should view as much of the contents as possible by looking into the box from different angles, and making use of inspection equipment such as mirrors, boroscopes, etc. as available.

2.7.6 Verify that visible internal structure of box is undamaged.

2.7.7 Sheets of wet-strength polypropylene/pulp super absorbent fabric have been placed in the bottom of the box or that one 50 lb. bag of uncalcined diatomaceous earth has been added and spread evenly in the bottom of the box.

2.7.8 If the box contains soil, wet-strength polypropylene/pulp super absorbent fabric or one 50 lb. bag of uncalcined diatomaceous earth has been added in alternating layers accounting for moisture level of soil.

2.7.9 Complete "Waste Certification Wood Box Examination Filling," QAC-881206-1 (Attachment E).

2.8 Monitoring Wood Box Closure Activities

Wood box closure activities shall be monitored occasionally to verify compliance. Results of the monitoring shall be documented on a check list and shall verify the following:

2.8.1 Plastic is folded over contents of box.

2.8.2 Form FMPC-CONT-1945-XX, "Item Production/Certification/Identification" card (W-65 Card, Attachment C) is filled out properly.

2.8.3 No moisture is visible on either the inside or the outside of the box.

2.8.4 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.8.5 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.8.6 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.8.7 Box does not exceed 5000 pounds gross weight.

2.8.8 Check for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.8.9 Complete "Waste Certification Wood Box Examination Filled Box," QAC-881206-2 (Attachment F).

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2.9 Examination of Metal Boxes Prior to Filling

2.9.1 Metal box examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

a. Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.
b. Containers must be clean and empty.
c. Each container shall be well constructed of steel with all seams adequately welded.
d. The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.
e. The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.9.2 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10 Examination of Metal Boxes at Closure After Filling

2.10.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.10.2 Containers must be clean.

2.10.3 Each container shall be well constructed of steel with all seams adequately welded.

2.10.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.10.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.10.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10.7 If container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.10.8 If steel boxes are used as overpack containers for previously inspected containers, no further inspection of the contents is required.

2.10.9 Examine container at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 Card, Attachment C) is completed accurately.
b. Verify that Radioactive material markings (2 sides) and FMPC container number markings are present and legible.
c. Verify that all unnecessary marking have been removed or covered.
d. Verify that gross weight does not exceed 6,000 pounds.
e. Verify marked gross weight value is consistent with shipment paperwork.
f. Verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
g. Verify that lid is properly placed on the box.
h. Verify locking pins required for the container are in place with the locking notches below the straps and fully engaged to full thickness of strap over entire locked surface edge of notch.
i. If bolted retainer ring is on, verify all bolts are securely in place.
j. Verify the lid is secured with two 1-1/4" steel straps.

2.10.10 For boxes filled with construction rubble, complete the "Construction Rubble Examination Metal Boxes" checklist, QAC-881206-3 (Attachment G).

2.11 <u>Examination of Sea/Land Cargo Containers Prior to Filling</u>

2.11.1 Sea/Land container examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

2.11.1.1 Containers must be clean and empty.

2.11.1.2 Each container shall be well constructed of steel with all seams adequately welded.

CHANGE NOTICE

No. EQP-12.03-00-01	Effective Date: 07/31/92	Page 1 of 1

AUTHORIZED: Eric G Johnson for Ellery D Savage

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PROCEDURE

EQP-12.03 Certification of Waste Package Examination and Sealing for Off-Site Shipment Rev. 0 05/30/91

Existing, Page 8 of 19, item 2.10.9.(d)

2.10.9 d. Verify that gross weight does not exceed 6,000 pounds.

Revise, Page 8 of 19, item 2.10.9.(d) as follows:

2.10.9 d. Verify that gross weight for DOT 7A containers does not exceed 8,000 lbs. Gross weight for older boxes may not exceed 6,000 lbs.

2.11.1.3 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.11.1.4 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.11.1.5 Verify a tare weight is marked on the container.

2.11.1.6 Verify that a 1/4" minimum continuous bead of RTW Silicone Adhesive Sealant, or equivalent, has been applied on all seams and corners of the container interior.

2.11.1.7 Verify that the container floors have been lined with wet-strength polypropylene/pulp super absorbent fabric, blotter paper, or uncalcined diatomaceous earth.

2.11.1.8 Verify that the absorbent fabric, blotter paper or uncalcined diatomaceous earth has been covered with a 0.006 mil thick plastic sheet that extends at least 36 inches up each side of the container.

2.11.1.9 Verify that plywood has been placed on the container floor and up to four feet in height on all sides. If container is top loading Sea/Land container, verify that the entire floor and sides are lined with plywood.

2.11.1.10 Verify that all container outside markings not related to the load have been removed.

2.11.1.11 Verify that a prohibited materials list has been attached to the container in a visible location.

2.11.1.12 After the container has been filled, verify that the back ledge of the container is clean.

2.11.1.13 Verify that the lid/door opening has been lined with 0.006 mil thick plastic or similar material to a height of 18 inches.

2.11.1.14 Verify that the load inside the container has been secured with plywood and 2" X 4" wood, or other similar type materials.

2.11.1.15 Verify that all doors and around all sealing surfaces have been caulked with RTW Silicone Adhesive Sealant, or the equivalent.

2.12 <u>Examination of Sea/Land Cargo Containers at Closure After Filling</u>

2.12.1 Each container shall be well constructed of steel with all seams adequately welded.

2.12.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.12.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.12.4 If Sea/Land container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.12.5 Examine Sea/Land containers at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 card, Attachment C) is completed accurately.
b. Verify that all unnecessary marking have been removed or covered.
c. Verify that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.
d. If Sea/Land container is top loading, verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
e. Verify that a prohibited materials list has been attached to the container in a visible location.

2.13 <u>Examination of Baled Trash</u>

2.13.1 Examine baled trash as follows:

a. Each bale shall have minimum of six (6) bands or straps for binding.
b. Free liquids are prohibited. Be watchful of liquids in pockets of water in a bags. Condensation in plastic bags is acceptable unless excessive.
c. Prohibited materials are not allowed in accordance with "Prohibited Materials List" (Attachment A).

<u>NOTE</u>: Reject bale if prohibited materials or suspicious items (i.e. asbestos) are present, and mark W-65 card accordingly.

d. "Bale Examination" checklist (Attachment H) is completed.
e. Using a barrel grab lift and turn the bale to check underside.
f. Ensure that form FMPC-CONT-1945-XX (W-65 card, Attachment C) is complete and accurate for each bale.
g. Initial and date the W-65 card after examining the card and bale.

NOTE: If bale is designated wet (to be sent to Plant 1 for drying) initial card but note that bale is wet (unacceptable for shipment).Wet bales will be recertified at Plant 1 prior to packaging for shipment.

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h. Make entry in log book at the baler.
i. Enter bale inspection on computer in Waste Packaging Office.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 EQP-1.05, Abbreviations, Acronyms, and Definitions
3.5 FMPC-706, Deviation and Corrective Action Reporting
3.6 EQP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.7 EQP-12.04, Certification of Loading and Shipment of Low-Level Radioactive Waste

4.0 ATTACHMENTS

4.1 Attachment A - Prohibited Materials List
4.2 Attachment B -Waste Certification Examination Report, "Drum Filling"
4.3 Attachment C -Item Production/Certification/Identification Card
4.4 Attachment D -Waste Certification Examination Report, "Prior to Transfer"
4.5 Attachment E -Waste Certification Wood Box Examination Filling
4.6 Attachment F -Waste Certification Wood Box Examination Filled Box
4.7 Attachment G - Construction Rubble Examination Metal Boxes
4.8 Attachment H -Bale Examination

PROHIBITED MATERIALS

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Metals

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any free liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

Attachment B
Page 1 of 1

WASTE CERTIFICATION EXAMINATION REPORT
"DRUM FILLING"

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WASTE CERTIFICATION
EXAMINATION REPORT
"DRUM FILLING"

DATE: _____ LOCATION: _____

CERTIFICATION SPECIALIST MATERIAL: _____

_____

LOT NO.: _____

DRUM #	INSIDE DRUM	OUTSIDE DRUM	NO LIQUIDS	I.S. LID	MTL. OK	SEAL OK .	W-65 COMP.	INITIAL ALL OK

Deviations Noted: Yes_____ No_____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date:_____

Waste Certification Specialist:_____ Date:_____

Attachment C
Page 1 of 1

ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION CARD

CARD XX **ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION** 129702

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DATE DAY	DATE YEAR	SHIFT	BADGE NO.	PACKAGE NO.

SEAL NUMBER	SEAL DATE MONTH	SEAL DATE DAY	SEAL DATE YEAR

WASTE DESCRIPTION AND COMMENTS

PACKAGE TYPE	
PACKAGE SIZE	

PACKAGE PHYSICAL CERTIFICATION	YES	NO
EMPTY CONTAINER AT START		
RUST HOLES OR DENTS		
MATERIAL IS AS CODED		
PROHIBITED MATERIALS		
LIQUIDS IN CONTAINER		
MINIMUM OF VOID SPACE		
PACKAGE SECURED		
DRAIN PLUG SECURED		

PLANT	PROD. MBA
PLANT TO	MBA TO

GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FMPC-CONT-1945-XX (REV 12/19/88)

*U.S. GPO: 1990-749-781

Attachment D
Page 1 of 1

WASTE CERTIFICATION EXAMINATION REPORT "PRIOR TO TRANSFER"

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WASTE CERTIFICATION
EXAMINATION REPORT
"PRIOR TO TRANSFER"

(Rev. 8/31/88)

DATE:_____ LOCATION:_____

CERTIFICATION SPECIALIST MATERIAL:_____

_____

LOT NO.:_____ _____

DRUM #	O.S. DRUM	O.S. LID	BOLT	RING	DRUM I.D.	WTS. OK .	W-65 (10%)	ALL OK

Deviations Noted: Yes_____ No_____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date:_____

Waste Certification Specialist:_____ Date:_____

QAC-881115-3, Rev. 1 (08/31/89)

Attachment E
Page 1 of 1

WASTE CERTIFICATION WOOD BOX EXAMINATION FILLING

WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLING

INFORMATION

MTL. TYPE: _____ BOX S/N(): _____

REQUESTOR: _____ LOCATION : _____

EXAMINATION (Waste Certification)

DATE CHECKED	STATUS	INITIALS

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-1, Rev. 1 (12/15/88)

WASTE CERTIFICATION WOOD BOX EXAMINATION FILLED BOX

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WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLED BOX

INFORMATION

MTL. TYPE: _____ BOX S/N(): _____

GENERATOR: _____ LOCATION : _____

EXAMINATION

	INITIALS
1. Check for damage to the box and lid. Verify no holes, cracks or defects which would permit leakage or lessen the structural integrity of the box.	_____
2. Verify clarity of shipment number and container number.	_____
3. Verify Gross Weight is marked on each box.	_____
4. Verify three metal bands are secure and located vertically with one in the center of the box and the remaining two equidistant from the center, one on each side, or verify that large boxes are secured with four evenly spaced bands.	_____
5. Verify no standing water on the box.	_____
6. Verify W-65 card information matches information marked on box.	_____
7. Verify the existence of the Low Specific Activity (LSA), Reportable Quantity (RQ), label identification, as applicable.	_____
8. Verify the existence of durable sealant compound between the lid and the box.	_____
9. Verify the existence of nails, attaching the lid to the box.	_____

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-2, Rev. 2 (12/15/88)

CONSTRUCTION RUBBLE EXAMINATION METAL BOXES

CONSTRUCTION RUBBLE EXAMINATION METAL BOXES

RECORD :
Container S/N : _____ Date : _____

PRIOR TO LOADING:

1. Verify that the container has no holes, tears or creases. _____
2. Verify drain plug is installed, if applicable _____
3. Verify the container lid is not damaged (including the gasket). _____
4. Verify that one bag of Uncalcined diatomaceous earth or absorbent pad is placed on top of soil. _____
5. Only correct materials are placed in container. _____
6. No free liquids are visible in the container. _____
7. Verify only unsaturated wood is used as topping-off material. _____
8. Verify gross weight of container does not exceed 6000 lbs. _____
9. Verify caulking/gasket, banding (2) and pins are all in place. _____
10. Verify the data record (W-65) is filled out correctly. _____

Note : Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ NO_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed : _____ Date : _____
(Waste Certification)

QAC-881206-3, Rev. 1 (12/08/88)

BALE EXAMINATION

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BALE EXAMINATION

BALE NUMBER_____ DATE_____

EXAMINATION:

1. Verify correct materials are placed in bale where visible. _____

2. No visual evidence of free liquids or seepage from bale, nor is material in bale saturated to the extent that seepage could be expected during bundling, handling and transport. _____

3. Verify the data record (W-65) is filled out correctly. _____

NOTE: Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ No_____

I hereby certify that the above checklist has been comoleted and witness that the above items are correct to the best of mv knowledce.

Signed:_____ Date:_____
(Waste Certification)

1.0 SCOPE

This procedure establishes a detailed method for the certification of Low-Level Radioactive Waste (L-LRW) packages (for additional abbreviations, acronyms, and definitions refer to EQP-1.05), the loading of L-LRW materials and the examination of highway transport vehicles for exclusive use shipments only at the Feed Materials Production Center (FMPC) to ensure compliance with applicable federal regulations.

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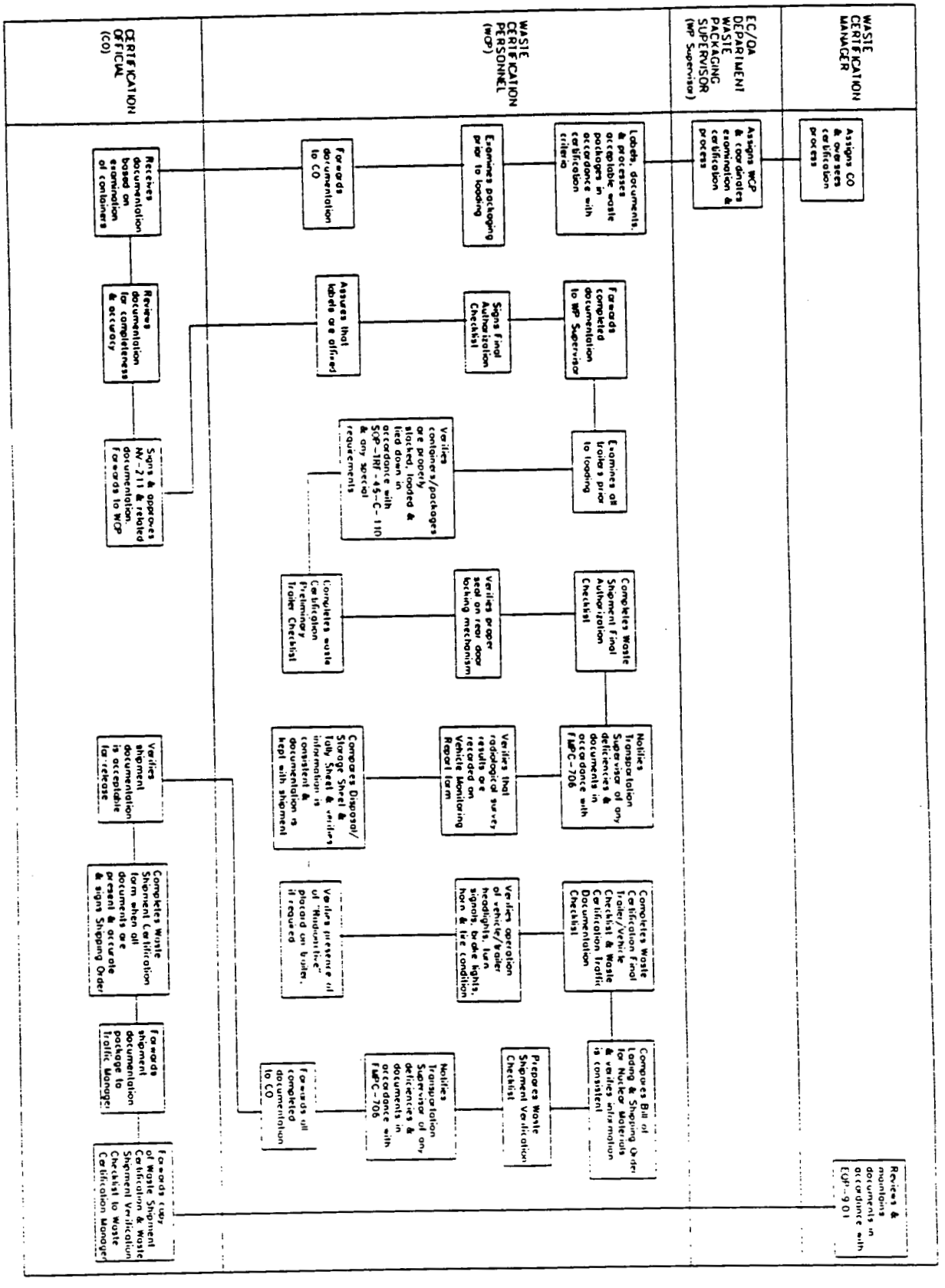
WASTE CERTIFICATION MANAGER
EC/QA DEPARTMENT WASTE PACKAGING SUPERVISOR (WP Supervisor)
WASTE CERTIFICATION PERSONNEL (WCP)
CERTIFICATION OFFICIAL (CO)
Assigns CO & oversees certification process
Assigns WCP & coordinates examination & certification process
Labels, documents, & processes acceptable waste packages in accordance with certification criteria
Examines packaging prior to loading
Forwards documentation to CO
Receives documentation based on examination of containers
Forwards completed documentation to WP Supervisor
Signs Final Authorization Checklist
Assures that labels are affixed
Reviews documentation for completeness & accuracy
Examines all trailers prior to loading
Verifies containers/packages are properly blocked, loaded & tied down in accordance with SOP-TRF-45-C-110 & any special requirements
Signs & approves NV-211 & related documentation. Forwards to WCP
Completes Waste Shipment Final Authorization Checklist
Verifies proper seal on rear door locking mechanism
Completes waste Certification Preliminary Trailer Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with FMPC-706
Verifies that radiological survey results are recorded on Vehicle Monitoring Report form
Compares Disposal/Storage Sheet & Tally Sheet & verifies information is consistent & documentation is kept with shipment
Verifies shipment documentation is acceptable for release
Completes Waste Certification Final Trailer/Vehicle Checklist & Waste Certification Traffic Documentation Checklist
Verifies operation of vehicle/trailer headlights, turn signals, brake lights, horn & tire condition
Verifies presence of "Radioactive" placard on trailer, if required
Completes Waste Shipment Certification form when all documents are present & accurate & signs Shipping Order
Compares Bill of Lading & Shipping Order for Nuclear Materials & verifies information is consistent
Prepares Waste Shipment Verification Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with FMPC-706
Forwards all completed documentation to CO
Forwards shipment documentation package to Traffic Manager
Forwards copy of Waste Shipment Certification & Waste Shipment Verification Checklist to Waste Certification Manager
Reviews & maintains documents in accordance with EQP-901

2.0 PROCEDURE

2.1 Event Notification and Reporting Requirements

2.1.1 All unplanned or unwanted events or incidents shall be immediately reported to supervision. In the supervisor's absence the Assistant Emergency Duty Officer (AEDO) shall be notified for proper notification and reporting in accordance with topical manual, FMPC-2182, "Emergency and Non-Routine Event Notification and Reporting."

2.1.2 Supervision shall evaluate all unplanned or unwanted events or incidents for determination of reportability as a Minor Event in accordance with site procedure, FMPC-704, Minor Event Reporting System.

2.1.3 Any circumstance of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to supervision. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety (RS) for evaluation.

2.2 Industrial Health and Safety Requirements

2.2.1 Leather palm gloves shall be worn when handling sharp-edged or abrasive materials, containers, lids and banding materials.

2.2.2 Safety glasses shall be worn by all personnel at all times posted areas, except when another type of eye protection equipment is specified.

2.2.3 Supervisors shall be responsible for contacting Industrial Hygiene for chemical air contaminants, or RS for radioactive contaminants, to determine appropriate respiratory protection. Determination of requirements shall be made in accordance with topical manual, FMPC-2128, Industrial Hygiene and Safety Manual.

2.2.4 Respirators, as determined required per 2.2.3, shall be available by supervision for each person working with waste material and shall be used in accordance with topical manual, FMPC-2084, Radiation Control Manual.

2.2.5 Any personnel involved with circumstances of an event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall report to Medical Services to submit a urine sample at the end of their shift, or as directed by their supervision, and again at the start of their next shift.

2.3 General Requirements For Transporting L-LRW and LSA Waste

NOTE: EQP-12.03 must be completed prior to implementation of this procedure.

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2.3.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) shall be trained and qualified on this procedure, EQP-12.03, NVO-325, and the Waste Certification Program Plan in accordance with Quality Assurance Procedure EQP-6.04, Qualification of Waste Package Certifiers, or on Quality Assurance Procedure EQP-6.05, Qualification of Waste Certification Officials.

2.3.2 Materials prohibited by NVO-325 and/or listed on the "Prohibited Materials List" (Attachment A) shall not be packaged for shipment.

2.3.3 Only materials approved by NTS, Solid Waste Compliance and Waste Management shall be shipped. The Quality Department Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.3.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 and CFR 49 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.3.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.421 and 173.425.

2.3.6 White Metal box containers may not exceed 6000 lbs. maximum gross weight, wood box containers may not exceed 5000 lbs., 48 or 55 gallon drums may not exceed 1200 lbs. maximum gross weight, 85 gallon drums may not exceed 1000 lbs. maximum gross weight, 85 gallon overpacks may not exceed 1280 lbs. maximum gross weight, or as specified in EQP-12.03.

2.3.7 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

2.3.8 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Waste Certification Personnel and recertified on the basis of the reexamination results.

2.3.9 Beta/Gamma radiation levels shall not exceed 200 millirem/hour measured externally at the surface or 10 millirem/hour measured externally at one (1) meter in accordance with 49 CFR 173.441.

Alpha emitters	220 DPM/100 cm^2
Beta/Gamma emitters	2200 DPM/100 cm^2

2.3.10 No container leakage is permitted under normal transport conditions in accordance with 49 CFR 173.425.

2.4 Examination of Packages in Staging Area

This examination will be performed at the loading area by Waste Certification Personnel who have been properly trained in this procedure and NVO-325 prior to loading any packages into trailers for shipment to NTS. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.1 Examination of Drums Prior to Loading

Examines sealed drums prior to loading on trailers for shipment to NTS. These drums are to be examined 100% by Waste Certification Personnel.

2.4.1.1 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.4.1.2 Checks for red paint on ring bolt to indicate it has been tightened to 45 ($\pm$ 5) ft-lbs. using torque wrench (Attachment B).

2.4.1.3 Checks for safety wire threaded through hole in with the bolt head or threaded portion of bolt and around threaded portion of bolt ring and fastened (Attachment C). Check that jam nut is locked to opposite side of bolt head or threaded with flat side against ring harness.

2.4.1.4 Examines all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop which may affect the integrity of the container.
f. Rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container (small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable).

g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

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2.4.1.5 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.1.6 Checks exterior of drums for moisture.

2.4.1.7 Checks that the gross weight does not exceed 1200 lbs. and that it is marked in two inch (minimum) letters on each drum.

2.4.1.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E) , and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.1.9 Notify Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.1.10 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.2 Examination of Wood Boxes Prior to Loading

Examines wood boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.2.1 Checks for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.4.2.2 No moisture is visible on either the inside or the outside of the box.

2.4.2.3 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.4.2.4 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.4.2.5 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.4.2.6 Box does not exceed 5000 pounds gross weight and that it is marked in two inch (minimum) letters on each box.

CHANGE NOTICE

No. EQP-12.04-02	Effective Date: 9/30/91	Page 1 of 1

AUTHORIZED: [illegible] for Ellery D. Gurney

Revise section 2.4.3.7 (a) as follows:

2.4.3.7 Examines container for proper closure as follows:

a. Verifies that Radioactive material markings (top and two sides) and FEMP container number markings are present and legible. Shipment number, lot number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.

2.4.2.7 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy. 6054

2.4.2.8 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.2.9 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.3 Examination of Metal Boxes Prior to Loading

Examines metal boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.3.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.4.3.2 Containers must be clean.

2.4.3.3 Each container shall be well constructed of steel with all seams adequately welded.

2.4.3.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.3.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.3.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.4.3.7 Examines container for proper closure as follows :

a. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.

b. Verify that all unnecessary marking have been removed or covered.
c. Verify that gross weight does not exceed 6,000 pounds and that it is marked in two inch (minimum) letters on each box.
d. Verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
e. Verifies that lid is properly placed on the box.
f. Verifies locking pins required for the container are in place with the locking notches below the straps and fully engaged to full thickness of strap over entire locked surface edge of notch.
g. If the bolt type utilizes a bolted retainer ring, verify all bolts are securely in place.
h. Verifies the lid is secured with two 1-1/4" steel straps.

2.4.3.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.3.9 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.3.10 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.3.11 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.4 <u>Examination of Sea/Land Cargo Containers Prior to Loading</u>

Examines sea/land containers at the loading area prior to loading on trailers for shipment to NTS. These containers are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Ready to Ship" Checklist (Attachment H).

2.4.4.1 Each container shall be well constructed of steel with all seams adequately welded.

2.4.4.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.4.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.4.4 Verifies that the exterior of the sea/land is in good condition.

a. Verifies that all unnecessary markings have been removed or covered.

CHANGE NOTICE

No. EQP-12.04-00-03	Effective Date: 07/31/92	Page 1 of 1

AUTHORIZED: Joe G. Schulz for Elley D. Emery

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PROCEDURE

EQP-12.04 Certification of Loading and Shipment of Low-Level Radioactive Waste
Rev. 0 05/30/91

Existing, Page 8 of 39, item 2.4.3.7.(c)

2.4.3.7 c. Verify that gross weight does not exceed 6,000 pounds and that it is marked in two inch (minimum) letters on each box.

Revise, Page 8 of 39, item 2.4.3.7.(c) as follows:

2.4.3.7 c. Verify that gross weight for DOT 7A containers does not exceed 8,000 lbs. Gross weight for older boxes may not exceed 6,000 lbs.

CHANGE NOTICE

No. EQP-12.04-00-05	Effective Date: 10/23/92	Page 1 of 1

AUTHORIZED: VP, (SA/CIP&QA) J A Fremski

PROCEDURE

EQP-12.04 Certification of Loading and Shipment of Low-Level Radioactive Waste
Rev. 0 05/30/91

- Revise, Page 8 of 39, add item 2.4.3.12 as follows:

  2.4.3.12 Affix tamper indicating device(s) to each container.

b. Verifies that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.

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c. Verifies gross weight of sea/land and that it is marked in two inch (minimum) letters on each sea/land.
d. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.
e. If Sea/Land container is top loading, verifies that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
f. Verifies that the sea/land container has been painted.

2.4.4.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.4.6 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination. (Attachment G)

2.4.5 <u>Examination of Bales Prior to Loading</u>

Examines bales at the loading area prior to loading on trailers for shipment to NTS. Bales are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.5.1 Verifies that each bundle of trash is properly constructed:

a. Consists of two bales of trash covered with Flex-Iron Bulk Bags or equivalent.
b. Each bag covered bale is mounted on a wood pallet.
c. Two of these subparts are stacked one on top of each other and a third wood pallet is positioned on top.
d. Two 1-1/4 inch straps of banding are wrapped around to secure the bundle and tightened with banding clips.
e. Cardboard strips are positioned to keep the metal banding strips from cutting into the bales.
f. Checks baled trash package for holes, tears, water leaks, and defects.

2.4.5.2 Verifies the top wood pallet is labeled with the shipment number and bundle number in one inch letters.

2.4.5.3 Verifies that markings are legible and waterproof ink has been used.

2.4.5.4 Verifies that the gross weight is marked on the top wood pallet

2.4.5.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.5.6 Notifies Waste Operations Supervisor of any nonconformance found and Checks that they are corrected prior to loading.

2.4.5.7 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.5 Examination of Package Markings and Labels

Immediately prior to transport loading, Waste Certification Personnel verify that the required markings and labels are applied to containers and grouped together. Marking and labeling in accordance with Title 49 CFR 172 Subparts D & E, is required as follows:

a. Each acceptable package shall have a "Radioactive LSA" label as required, form FMPC-T-1623 (Attachment I), if the surface dose rate exceeds 0.5 mR/hr. or the U-235 content exceeds 15 grams.
b. Each acceptable package shall have a "RADIOACTIVE-LIMITED QUANTITY" Label, FMPC-REST-1623-1 (Attachment I) if the surface does rate is equal to or less than 0.5 mR/hr. and the U-235 content is less than or equal to 15 grams.
c. Each package which contains 0.1 Curries or greater of Uranium must be labeled "RQ" in conjunction with the requirements of sections 2.5.a. and 2.5.b. (Attachment I).
d. Each acceptable package will have the letters "WML" and the shipment number on the package exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
e. Each acceptable package shall have a separate package number on the exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
f. Each acceptable package shall have the gross weight marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.
g. Each package certified as acceptable for NTS disposal shall have a required "NV-211 Packaging Certification Label," FMPC-Q&S-234 or FMPC-Q&S-234-1 (Attachment G), affixed after examination of the package and shortly before or during loading. The label shall be displayed on the side of the package in a group pattern with other labels and markings.

2.6 Documentation of Examination and Deviations

Immediately prior to transport loading, Waste Certification Personnel assure that all examinations are properly documented on the applicable checklist, as required; assures that nonconforming conditions are documented and processed as follows:

2.6.1 Any deviations observed should be documented on the appropriate checklist.

CHANGE NOTICE

No. EQP-12.04-01	Effective Date: 8/30/91	Page 1 of 1

AUTHORIZED: Allen R. Swanson

Revise Section 2.5 as follows:

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2.5 Examination of Package Markings and Labels

Immediately prior to transport loading, Waste Certification Personnel verify that the required markings and labels are applied to containers and grouped together. Marking and labeling in accordance with Title 49 CFR 172 Subparts D & E, is required as follows:

a. Each acceptable package shall have a "Radioactive LSA" label as required, form FMPC-T-1623 (Attachment I), if the surface dose rate exceeds 0.5 mR/hr. or the U-235 content exceeds 15 grams.

b. Each acceptable package shall have a "RADIOACTIVE-LIMITED QUANTITY" Label, FMPC-REST-1623-1 (Attachment I) if the surface does rate is equal to or less than 0.5 mR/hr. and the U-235 content is less than or equal to 15 grams.

c. Each package which contains 0.1 Curries or greater of Uranium must be labeled "RQ" in conjunction with the requirements of sections 2.5.a. and 2.5.b. (Attachment I).

d. Each acceptable package will have the letters "WML" and the shipment number on the package exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.

e. Each acceptable package shall have a separate package number on the exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.

f. Each acceptable package shall have the gross weight marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.

g. Each acceptable package shall have the lot marking code marked on the exterior. This may be either stencilling in two inch block or legible letters on bar code label.

h. Each acceptable package shall have the waste stream number marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.

i. Each package certified as acceptable for NTS disposal shall have a required "NV-211 Packaging Certification Label," FMPC-Q&S-234 or FMPC-Q&S-234-1 (Attachment G), affixed after examination of the package and shortly before or during loading. The label shall be displayed on the side of the package in a group pattern with other labels and markings.

2.6.2 Any waste package rejected due to non-acceptable or non-authorized contents or physical damage to the containers shall have a nonconformance tag attached to it as identification (See FMPC-706). Deviations shall be corrected prior to affixing "NV-211 Packaging Certification Label." Uncorrectable deviations or lack of prompt or appropriate action, or chronic and/or systematic errors must be documented on a Deviation or Corrective Action Report in accordance with FMPC-706.

2.6.3 Any waste packages rejected due to improper labeling or identification shall be corrected prior to affixing a "NV-211 Packaging Certification Label." If no acceptable solution can be defined, a nonconformance tag shall be attached and a Deviation Report shall be issued in accordance with FMPC-706.

2.6.4 Forwards appropriate forms and documentation to Certification Official for review, approval, and certification.

NOTE: Disposal of any rejected containers, lids, bolt rings, or lever rings shall be the responsibility of Waste Operations or the generator of the package.

2.7 Preliminary Certification

Waste Certification Personnel examine the transport trailer prior to loading and completes the appropriate checklist.

2.7.1 Examines the transport trailer/vehicle as follows:

2.7.1.1 Verifies that the RS Technician has surveyed each trailer/vehicle prior to loading and has recorded results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), to ensure that radiation and contamination levels do not exceed the requirements listed in 49 CFR 173.441.

2.7.1.2 Determines the condition of the trailer/vehicle by examining the trailer/vehicle floor, interior, roof, roof interior, rear door, rear door gasket, and tires. Any of the following conditions shall be brought to the attention of the Traffic Manager:

a. holes or "soft" areas in floor or roof which would allow possible leakage and/or jeopardize the structural integrity of the trailer/vehicle
b. liquid or oily substances on interior surfaces
c. non-securing or poor sealing rear doors
d. tires
    1. insufficient tread (2/32" min. trailer, 4/32" min. tractor)
    2. separation of tread
    3. punctures
    4. bulges
    5. underinflated (use manufacturer's recommended pressure, cold)
    6. flats

2.7.1.3 Examines the lining of trailer/vehicle for compacted baled trash and verifies that the floor and approximately three (3) feet up the side and rear walls are covered with plastic sheet, and that the floor is covered with single-faced cardboard or approved equivalent.

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2.7.1.4 Completes the "Waste Certification Preliminary Trailer Checklist" (Attachment K) or the "Waste Certification Preliminary Trailer Checklist (Sea/Lands)" (Attachment L).

2.8 Examination of Drums

Waste Certification Personnel examine drums at loading and verifies that drums have been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.8.1 Drummed materials requiring proper weight distribution have been placed into the vehicle split into two groups:

a. the front unit is encircled with 1-1/4" steel strapping, connected with two clips, double-crimped, and 2 x 4 wood shoring nailed to the floor behind the unit.
b. the rear unit is placed so as the proper weight distribution is maintained and a wood picket brace is constructed at the front of the group. Drums behind the picket brace are encircled with 1-1/4" steel strapping connected with two clips, double-crimped, and providing no metal plate is directly behind the group, 2 x 4 wood shoring is nailed to the floor behind the group.

2.8.2 Double-decked drummed material has been loaded in a similar manner as paragraph 2.8.1, except for the following:

a. the floor is loaded solid,
b. a piece of plywood has been placed on the top of the first deck and the second deck of drums has been loaded from the front to the rear. Both rows of drums have been encircled with 1-1/4" steel strapping, with two clips, double-crimped,
c. two-by-four wood shoring has been nailed to the floor behind the first deck of drums, if no metal plate is directly behind the drums.

2.9 Examination of Metal Boxes

Waste Certification Personnel examine metal boxes at trailer loading and verifies they are not damaged, that metal boxes have been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.9.1 Metal Boxes have been placed into the vehicle correctly for proper weight distribution. Normally, these shipments contain either seven (7) to ten (10) containers. With seven (7) containers a split of three (3) in the front unit and four (4) in the rear unit is required. Ten (10) containers are to be loaded straight down the center of the vehicle floor. When the number of containers making up the shipment are not seven (7) or ten (10), they are to be loaded them in the same manner as for seven (7).

2.9.2 Front Unit (2-5 boxes) were shored using two sets of brakeman plates nailed to the floor of the vehicle (prior to loading) with 1-1/4" steel strapping threaded through each plate. Two of these units are used to encircle each load unit (2 bands) and shall be tightened and fastened with two clips, double-crimped. The bands have plastic protectors on the edges of the first and last container to keep the bands from breaking.

2.9.3 Rear Unit (2-5 boxes) has been shored using 2" X 4" brace in front of the containers. Use same method of steel banding as on the front unit.

2.9.4 The shoring of ten (10) metal boxes has been accomplished using the same steel banding method as used for seven (7). The first five (5) have been banded as one unit, and the last five (5) as one unit.

2.10 Examination of Wooden Boxes

Waste Certification Personnel examine wooden boxes at loading and verifies they are not damaged and that wooden boxes are properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.10.1 Wooden boxes have been placed into the vehicle for proper weight distribution. Normally, these shipments consist of sufficient numbers to require partial double-decking. When double-decking is required the double stacks shall be banded together prior to loading.

2.10.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicle with 1-1/4" steel strapping threaded through each plate.

2.10.3 Boxes are loaded straight down the center of the vehicle floor.

2.10.4 Two (2) bands have been used to encircle the first six (6) boxes as one unit and the last five (5) as one unit.

2.11 Examination of Compacted Baled Trash

2.11.1 Waste Certification Personnel examine compacted baled trash at loading and verifies that compacted baled trash has been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.11.1.1 Compacted bales of trash placed for proper weight distribution have been double stacked and loaded straight down the center of the vehicle floor. Normally, these shipments consist of twenty-two (22) bales (11 packages) of compacted trash.

2.11.1.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicles with 1-1/4" steel strapping threaded through each plate. Six side cleats with 1-1/4" steel strapping have been nailed to the floor on both sides of the vehicle for cross banding of the bales.

2.11.1.3 After the first five double stacks of bales have been loaded, the front unit has been encircled with steel strapping and the bands tightened and fastened with two clips, double-crimped.

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2.11.1.4 Cross bands have been placed over stack numbers one, three, and five. Single-faced cardboard has been folded for a minimum of 4-ply protection and placed under the bands of the top bales plastic enclosure. The bands have been tightened and fastened with two clips double-crimped.

2.11.1.5 The rear section has been banded in the same manner as the front section except that cross bands have been placed over bale numbers seven, nine and ten.

2.12 Examination of Sea/Land Cargo Containers

Waste Certification Personnel examine Sea/Land container at loading, checks the maximum gross weight on container with actual gross weight, and verifies that container has been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.12.1 Sea/Land containers have been placed onto a flat bed truck for proper axle-weight distribution. For a shipment consisting of one container, the doors of the container shall be facing the rear of the truck. For a shipment consisting of two containers the doors of the front unit shall be facing to the rear and the rear unit shall be facing the front of the truck.

2.12.2 If the container or shipment exceeds 42,000 gross pounds, a waiver must be approved by the Manager, Transportation Regulatory Compliance and Certification Official as to whether or not it may be shipped. A copy of the appropriate letter will be attached to the "Ready to Ship" Checklist when it is prepared during the check of incoming paperwork.

2.12.3 Containers have been secured to the flatbed truck with four (4) nylon straps over each unit secured to the frame of the trailer, chains have been placed and secured in front of and behind the bottom of each container fastened to the trailer bed, and a 2 x 4 has been nailed to the trailer floor at the rear of each unit.

2.13 General Examination Activities After Loading

Waste Certification Personnel shall conduct the following activities after the trailer has been loaded:

NOTE: Two (2) photographs of the packages shall be taken prior to closing the doors of the trailer. Photos are also required of flat bed loads. Include information on shots to be taken.

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AUTHORIZED: VP, (SA/CIP&QA) J.N. Krumsli

PROCEDURE

EQP-12.04 Certification of Loading and Shipment of Low-Level Radioactive Waste
Rev. 0 05/30/91

Existing, Page 14 of 39, item 2.13, NOTE

2.13 General Examination Activities After Loading

Waste Certification Personnel shall conduct the following activities after the trailer has been loaded:

NOTE: Two (2) photographs of the packages shall be taken prior to closing the doors of the trailer. Photos are also required of flat bed loads. Include information on shots to be taken.

Revise, Page 14 of 39, item 2.13, NOTE as follows:

2.13 General Examination Activities After Loading

Waste Certification Personnel shall conduct the following activities after the trailer has been loaded:

NOTE: Two (2) photographs of the packages shall be taken prior to closing the doors of the trailer. Photos are also required of flat bed loads. ***Include the trailer number in the photos. Label the pictures with shipment number, date and initials.***

2.13.1 Verifies that the trailer is locked or a numbered tamper-indicating seal is applied to the rear door locking mechanism whenever the trailer is unattended overnight or for any other extended period. If a seal or lock is not used prior to resumption of loading or closure of the van, an examination shall be made to verify that the packages previously loaded were not disturbed and no unauthorized packages or materials were placed in the shipment.

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2.13.2 Completes the examination of the loaded trailers for NTS shipments and completes the "Waste Shipment Final Authorization Checklist" (Attachment B).

2.13.3 Reports, by copy of the appropriate checklist, any deficiencies to the Transportation Supervisor for correction. Checklists which include deficiencies are recorded and tracked on a deficiency log. Documents any repetitive or uncorrected deficiencies in accordance with FMPC-706.

2.13.4 Forwards all completed documentation to the the individual who will be making the final inspection at Traffic prior to release of the trailer.

2.14 Final Trailer/Vehicle Examination

Waste Certification Personnel conduct a final examination of the vehicle/trailer after closure as follows:

2.14.1 Verifies that the shipment, associated paperwork and transport vehicle is acceptable for release.

2.14.2 Verifies that RS Technician has surveyed the trailer/vehicle and recorded the results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), and that these results are within specification.

2.14.3 Compares the "Storage & Disposal Data Sheet" (Attachment D) with the "Bill of Lading" (Attachment M) to verify that the following information is correct:

a. Number and type of containers
b. Total curie content
c. Shipment gross and net weight
d. Shipment number

2.14.4 Verifies that an envelope containing copies of the "Tally Sheet," "Storage & Disposal Data Sheet" (refer to EQP-12.03), and LSA/RQ, LQ (Limited Quantity) documentation of the shipment is fastened to the rear container when possible or stapled to the trailer wall inside of the trailer doors for NTS use upon opening the trailer at the destination. If the shipment is not in a closed van, verifies that the "Tally Sheet" and "Storage & Disposal Data Sheet" are in the envelope which is to be delivered by the driver.

2.14.5 Verifies the presence of "Radioactive" placard on both sides, front and rear of vehicle/trailer.

NOTE: A shipment containing limited quantity packages exclusively does not require these placards.

2.14.6 Verifies that the following are operational on the vehicle/trailer. Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N).

a. Headlights
b. Turn signals
c. Brake lights
d. Horn
e. Tire condition, per section 2.7.1.2 of this procedure

2.14.7 Compares the "Bill of Lading" (Attachment M) and the "Shipping Order for Nuclear Material," form FMPC-CONT-558 (Attachment O), to verify the following:

a. Trailer Number
b. Shipment Number
c. Gross Wt. and Net Wt.
d. Bill of Lading Number
e. Shipping Order Number
f. Seal Number
g. Lot Number
h. Container Number (for Sea/Land containers)

2.14.8 Verifies that a seal has been placed on the trailer and that the trailer number and the seal number match the seal number recorded on the "Bill of Lading" (Attachment M), and reviews the "LLW Shipment Checklist" (Attachment Q), and the "Off-Site Loading Tie-Down Inspection-Vehicle Inspection" Form (Attachment S).

2.14.9 Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N), and "Waste Certification Traffic Shipment Documentation Checklist" (Attachment P).

2.14.10 Verifies that the gross weight on all documentation is within 100 lbs. of actual.

2.14.11 When instructed, completes the "Waste Shipment Verification Checklist" (Attachment T), for the Certification Official by verifying the following information:

a. Radiation Monitoring Sheets
b. Off-Site Tie Down Inspection/Vehicle Inspection Form
c. Weight Ticket
d. Shipping Order
e. Bill of Lading
f. Disposal/Storage Sheet
g. Tally Sheet
h. Radiological Survey Report
i. LLW Shipment Checklist

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j. Sea/Land Container "Ready to Ship" (If applicable)
k. Waste Certification Preliminary Trailer Checklist
l. Waste Certification Traffic Shipment Documentation Checklist
m. Waste Certification Final Trailer/Vehicle Checklist
n. Item Production/Certification/Identification Card

2.14.12 Reports all deficiencies on the appropriate checklist. Repetitive or uncorrected deficiencies are documented in accordance with FMPC-706.

NOTE: Uncorrected deviations must be resolved before Quality Department can provide a release of the shipment.

2.14.13 Notifies the Certification Official that shipment paperwork is complete and available for final review.

2.14.14 Forwards completed documentation to Waste Certification Manager who reviews and maintains documents in accordance with WMCO-QAP-9.01.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 EQP-1.05, Abbreviations, Acronyms, and Definitions
3.5 EQP-6.04, Qualification of Waste Package Certifiers
3.6 EQP-6.05, Qualification of Waste Certification Officials
3.7 FMPC-706, Deviation and Corrective Action Reporting
3.8 EQP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.9 EQP-12.03, Certification of Waste Package Examination and Sealing for Off-Site Shipment
3.10 SOP-TRF-46-C-110, Preparation and Shipment of Radioactive Material (Low-Level Waste)
3.11 SOP 20-C-601, Packaging Low Level Radioactive Waste (L-LRW) for Offsite Disposal
3.12 SOP 1-C-602, Low Level Radioactive Waste (L-LRW) Shipment Preparations

4.0 ATTACHMENTS

4.1 Attachment A, Prohibited Materials List
4.2 Attachment B, Waste Shipment Final Authorization Checklist
4.3 Attachment C, Bolt Diagram
4.4 Attachment D, Storage & Disposal Data Sheet
4.5 Attachment E, Tally Sheet
4.6 Attachment F, Computer Printout - "Circle Copy"
4.7 Attachment G, NV-211 Packaging Certification Labels

4.8	Attachment H,	"Ready to Ship" Checklist (for Sea/Lands)
4.9	Attachment I,	Radioactive-LSA, Radioactive-Limited Quantity, & "RQ" Labels
4.10	Attachment J,	Vehicle Radiation Monitoring Report
4.11	Attachment K,	Waste Certification Preliminary Trailer Checklist
4.12	Attachment L,	Waste Certification Preliminary Trailer Checklist Sea/Lands)
4.13	Attachment M,	Bill of Lading
4.14	Attachment N,	Waste Certification Final Trailer/Vehicle Checklist
4.15	Attachment O,	Shipping Order for Nuclear Material
4.16	Attachment P,	Waste Certification Traffic Shipment Documentation Checklist
4.17	Attachment Q,	LLW Shipment Checklist
4.18	Attachment S,	Off-Site Loading Tie-Down Inspection-Vehicle Inspection Form
4.19	Attachment T,	Waste Shipment Verification Checklist

PROHIBITED MATERIALS LIST

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Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Materials

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any Free Liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

SHIPMENT NUMBER: WML-_____

WASTE DESCRIPTION: _____

Waste Package Description:

Package Type _____

Number of Packages _____ Verified by (Initials) _____

VERIFICATION CRITERIA PER QAP 12.09

Verify the following:

1. Information on packages matches REECO Radioactive Waste Management - Storage & Disposal Sheet (Circle Copy) and no inappropriate information present on packages. _____
2. No unauthorized materials loaded. _____
3. No free liquids on or emitting from packages. _____
4. No significant package defects such as dents, rust, holes, cracks, or tears (baled trash). _____
5. Proper closure of container lid. _____
6. Packages are free of adhering or entrapped soil, debris, etc. _____

Verify the following where applicable:

Drums: Presence of safety wire on bolts. _____

Locking nut tightened (red paint on bolt). _____

Lid and ring are seated properly. _____

Wood boxes: Lid nailed and secure, adequate caulking, and three 1 1/4" metal bands present (one on each end and one in middle) and secure. _____

Holes drilled in false bottom, runners secure and no severly bowed sides or liquid seepage. _____

Metal boxes: Required number of wedge type locking pins are fully engaged catching lower edge of locking strap and are at least even with locking strap. _____

Two 1 1/4" metal bands are banded tightly with two banding clips on each band equidistant from center around package. _____

Presence of a red dot (drain plug exists) or a black dot (no drain plug). _____

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST
(continued)

6054

Existance of gasket around lid when possible. _____

Open holes in runners. _____

Baled trash: Two 1 1/4" metal bands and two banding clips on each band strapped evenly and tightly completely around the outside of the closed sides of the top and bottom pallets. _____

Corrugated cardboard present on top of bale and under banding in area of band/pallet contact. _____

Shipment information located on the top pallet of each bundle. _____

Verify shipment number, FMPC, and package number are stenciled in 1-inch block letters located on top center and on the side of all packages except for baled trash (sides only). _____

LOADING INFORMATION

Verify presence of the following labels:
DOT Radiation Labels, Radioactive LSA and LQ/RQ as applicable. _____

Package containing asbestos require asbestos label, ORM-C. RQ should be stenciled next to ORM-C only when quantity of asbestos meets EPA and 49 CFR reportable quantity limits. _____

NV-211 label dated and signed by an authorized package certifier. _____

Verify the loading of the shipment concurs with the criteria established in SOP TFR-46-C-110, Section 6.1. _____

Shipment Number Loaded:_____ Time:_____ Date:_____

Trailer Number:_____ Seal Number:_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed:_____ Date:_____
QA Waste Packaging

Comments:_____

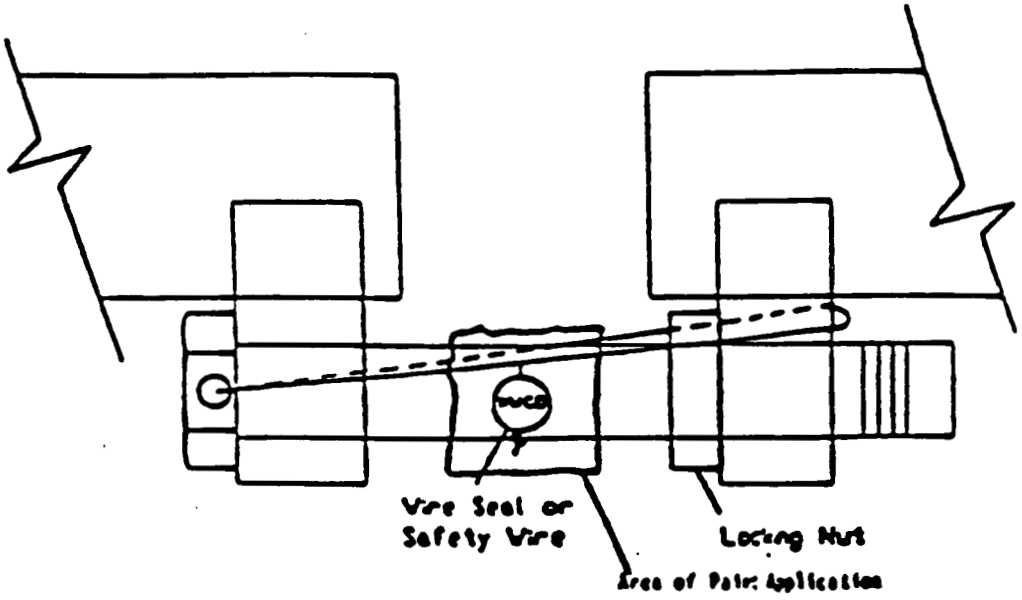
_____

Signed:_____ Date:_____
Waste Operations Supervisor

Copies to :Waste Certification Files
Waste Operations (original)

QAC-881115-1, Rev. 1 (03/01/90)

BOLT DIAGRAM



Attachment D
Page 1 of 1

STORAGE & DISPOSAL DATA SHEET

6054

WNL-90 091

02/27/90
14:50:10

Reynolds Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

DESCRIPTION: Construction Rubble
Maintenance Rubble

Prepared by: [signature]
Date: 2/27/90 Area Code Phone FTS 774-8647

Approved: Responsible Personnel [signature]
Date: 2-27-90 Area Code Phone FTS 774-8647

SECTION 1

CARD	SHIPMENT NUMBER (2–9)	O C D S O FY TR G (10–17)	NUCLIDE CATEGORY (25)	CURIE QUANTITY (26–34)	C (35)	GROSS VOLUME (36–44)	F (45)	GROSS WT(lbs) (46–54)	P (55)	OVERPACKS
										0
										BOXES 10
2	WNL90091	O B L O B 9 0 2	2	2.795E-04		1.020E+03		2.461E+04		DRUMS
				0.0002794		1020.00		24605.0		0

SECTION 2

CARD (2)	NUCLIDE DESCRIPTION (15–24)	QUANTITY (16–24)	C (25)	S (26)	COMMENTS (27)
3	U-238	2.707E-04	C	1	810 GRAMS
3	U-235	8.754E-06	C	2	4 GRAMS

SECTION 3

CARD	WASTE CODE (23–4)	VOLUME CU.FT. (12–16)	% COMB. (13–14)	WEIGHT LBS. (17–25)	S (26)	COMMENTS (27–28)
3	00	8.160E+02	F	0 1.804E+04	P	1 835
3	00	2.040E+02	F	0 6.570E+03	P	2 841

OTHER 0

SECTION 5

CARD	CONT NUMBER	ASSAY DATE	CLASS CODE	CONT/AT CODE	GROSS WEIGHT LBS	GROSS VOLUME CU.FT.	RADIATION AT SURF mrem/hr	RADIATION AT 3 FT mrem/hr	PRIMARY ELEMENT & ISOTOPIC	PRIMARY CURIE QUANTITY	SECONDARY ELEMENT & ISOTOPIC	SECONDARY CURIE QUANTITY	PRIMARY ISOTOPE WEIGHT GRAMS	SECONDARY ISOTOPE WEIGHT GRAMS
6/7	1	05/09/89	2122	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	2	05/09/89	2122	8352122	1875.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	3	05/09/89	2122	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	4	05/09/89	2122	8412122	2930.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	5	05/09/89	2122	8352122	4293.0	102.00	0.30	0.30	U-238	6.0158E-05	U-235	1.9454E-06	180	0.9
6/7	6	05/09/89	2122	8352122	1537.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	7	05/09/89	2122	8352122	2923.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	8	05/09/89	2122	8412122	3640.0	102.00	0.30	0.30	U-238	4.5118E-05	U-235	1.4590E-06	135	0.7
6/7	9	05/09/89	2122	8352122	1300.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	10	05/09/89	2122	8352122	2759.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5

Attachment E
Page 1 of 1

TALLY SHEET

WAL-90 091

02/27/90
14:50:01

TO: Reynolds Electric and Engineering Co., Inc.
U.S. DOE, Nevada Test Site, Zone 2
Mercury, NV 89023
Attention: G. Kendall

NEVADA TEST SITE SHIPMENT
TALLY SHEET
LOT NUMBER W050-100-P003-9023
LOT NUMBER W050-100-P003-A334

FROM: Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, OH 45239

LOT NUMBER	CONT. NO.	GROSS WT. (POUNDS)	TARE WT. (POUNDS)	NET WT. (POUNDS)	U ASSAY	PERCENT U-235	PERCENT U-238	U POUNDS	ELEMENT WT(gms)	U-235 ISOTOPE WT(gms)	U-238 ISOTOPE WT(gms)	U-235 CI	U-238 CI	VOLUME CU FT
A334	1	1674.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	2	1875.0	630.0	1245.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	3	1674.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
9023	4	2930.0	630.0	2300.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
A334	5	4293.0	630.0	3663.0	0.010	0.500	99.48	0.4	181	0.9	180	1.9454E-06	6.0158E-05	102.00
A334	6	1537.0	630.0	907.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	7	2923.0	630.0	2293.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
9023	8	3640.0	630.0	3010.0	0.010	0.500	99.48	0.3	136	0.7	135	1.4590E-06	4.5118E-05	102.00
A334	9	1300.0	630.0	670.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	10	2759.0	630.0	2129.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
TOTALS		24605.0	6300.0	18305.0				1.8	815	4.1	810	8.7540E-06	2.7071E-04	1020.00
					--- LOT TOTALS ---									
9023	2	6570.0	1260.0	5310.0				0.5	227	1.1	226	2.4317E-06	7.5197E-05	204.00
A334	8	18035.0	5040.0	12995.0				1.3	590	2.9	587	6.3223E-06	1.9551E-04	816.00

COMPUTER PRINTOUT - "CIRCLE COPY"

6054

WML-90 091

Reynolds Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

PACKAGE NO.	NET WT	TARE WT	GROSS WT	LSA	LQ	RQ
1	1044.00	630.00	1674.00	X		
2	1245.00	630.00	1875.00	X		
3	1044.00	630.00	1674.00	X		
4	2300.00	630.00	2930.00	X		
5	3663.00	630.00	4293.00	X		
6	907.00	630.00	1537.00	X		
7	2293.00	630.00	2923.00	X		
8	3010.00	630.00	3640.00	X		
9	670.00	630.00	1300.00	X		
10	2129.00	630.00	2759.00	X		

NV-211 PACKAGING CERTIFICATION LABELS

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: CERTIFICATION OFFICIAL

ORGANIZATION: FMPC

FMPC-O&S-234 (REV. 9/7/89)

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: PACKAGE CERTIFIER

ORGANIZATION: FMPC

FMPC-O&S-234-1 (REV. 9/7/89)

Attachment H
Page 1 of 1

"READY TO SHIP" CHECKLIST (FOR SEA/LANDS)

6054

WASTE CERTIFICATION CHECKLIST
SEA LAND CONTAINER
"READY TO SHIP"

INFORMATION (Waste Operations)

DATE: _____ SHIPMENT NUMBER: _____

MTL. TYPE: _____ BOX ___ S/N: _____

MTL. TYPE: _____ ___ _____

LOCATION : _____ WEIGHTS: Gross _____ BOX 1 _____ BOX 2

_____ Tare _____ _____

_____ Net _____ _____

EXAMINATION CRITERIA (Waste Certification)

Initials

Trailer No.: _____

0. Verify "Item Production/Certification/Identification" XX card is completed accurately. Form Number FMPC-ES&H-1945-XX. _____
1. Radioactive material markings present. (2 sides) _____
2. Container Number-FMPC marking present. _____
3. All unnecessary markings have been removed or covered. _____
4. Marking is complete as follows:
   Proper shipping label(s) identified (LSA, RQ, LQ) _____
   Gross weight identified _____
5. Marked weight values match above values. _____
6. The box door has been sealed by caulking and a metal band is attached to both door latches. _____
7. Seal number _____ affixed to container. _____

PLACE NV-211 ON DOOR OF CONTAINER WHEN ABOVE CRITERIA IS SATISFACTORILY MET.

CERTIFICATION (Waste Certification)

I hereby certify the above items have been examined and the above items are correct to the best of my knowledge.

Signed: _____
(Waste Certification)

Date: _____

QAC-880930-1, Rev. 2 (08/15/89)

RADIOACTIVE-LSA, RADIOACTIVE-LIMITED QUANTITY, & "RQ" LABELS

Radioactive-LSA

RADIOACTIVE-LIMITED QUANTITY

UN-2910

FROM: FMPC

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN-2910.

FMPC-REST-1623-1 (REV. 10/23/89)

RQ

Attachment J
Page 1 of 1

6054

VEHICLE RADIATION MONITORING REPORT

FMPC
ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL & RADIOLOGICAL MONITORING

VEHICLE RADIATION MONITORING REPORT

Date Monitored: _____ Monitored by: _____ (signature)

Carrier Name: _____

Vehicle Type: Tractor-trailer ☐ Other motor vehicle ☐ Railcar ☐ Open flatbed ☐ Covered ☐

Other ☐ (explain) _____

License no., if motor vehicle: _____ State: _____

Trailer or railcar identification: _____

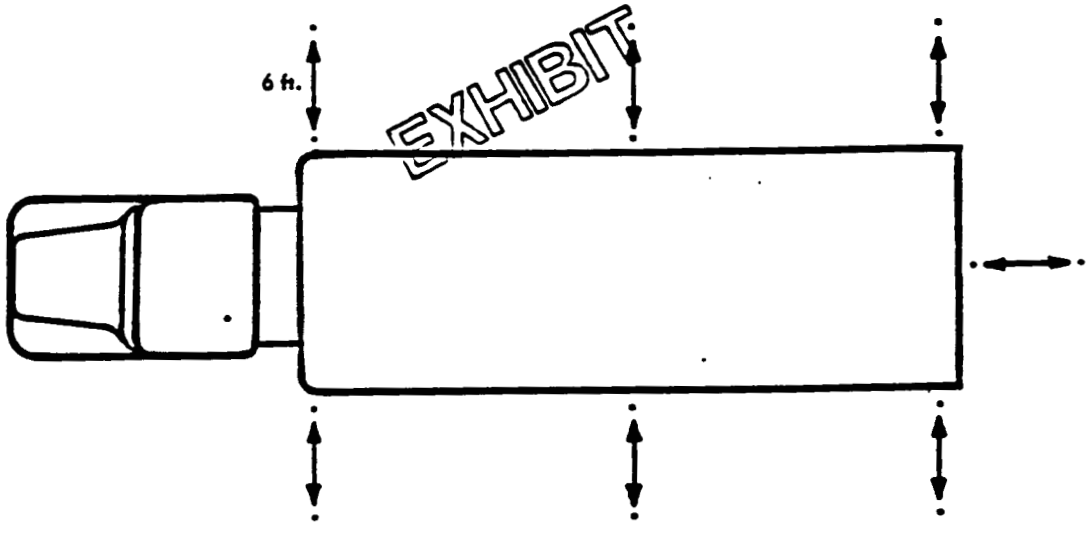
Is this an exclusive use vehicle? Yes ☐ No ☐

Vehicle Status: (a) Outgoing ☐ (b) Incoming ☐ (c) Outgoing empty, not "exclusive use" ☐ (d) Empty, before loading ☐

(e) Outgoing empty, "exclusive use" ☐ (f) If (e) is checked, is vehicle to remain "exclusive use"? Yes ☐ No ☐

Is visible contamination present? Yes ☐ No ☐ If "yes", show on diagram.

Dose rate shown by asterisks in mrem/hr. Surface alpha contamination, circled, in d/m/100cm².



(1) Same locations apply to van-type trucks. For railcars, disregard cab section but show dose rates found at each end.
(2) Measurements at 6-ft. not required if all readings at vehicle surface are not greater than 10 mrem/hr.

Survey Instruments Used

Alpha — Type or Model No _____ Serial No. _____

Beta-gamma — Type or Model No _____ Serial No. _____

Additional information attached? (E&RM copy only): Yes ☐ No ☐

NO.	DISTRIBUTION OF COPIES
1	Environmental & Radiological Monitoring (FMPC COPY)
2	Transportation Supervisor

FMPC ESH 1506-1 REV 8/28/86

WASTE CERTIFICATION PRELIMINARY CHECKLIST

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST

TRAILER NUMBER: _____

1. Verify the RST has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated. _____

2. Verify the condition of trailer floor, interior, roof, sides, exterior, rear doors and tires are acceptable. Any discrepancies must be reported immediately to the Transportation Supervisor. _____

Comments: _____

_____

3. Verify the trailer has been lined properly according to SOP-TRF-46-C-110 prior to loading. _____

4. Visually verify that the packages have been properly tied-down according to SOP-TRF-46-C-110. _____

   Shipment Number: _____

5. Visually verify that the loaded trailer rear doors are secured with a tamper indicating seal. _____

   Seal Number: _____

I hereby certify that the above checklist item have been verified and that all the above items are correct to the best of my knowledge.

Signed : _____
(Certification Personnel)

Date : _____

Signed : _____
(Transportation Supervisor)

Date : _____

Attachment L
Page 1 of 1

WASTE CERTIFICATION PRELIMINARY CHECKLIST (SEA/LANDS)

6054

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST (SEALANDS)

Rev. 10/10/89

Trailer Number:_____ Shipment Number:_____

1. Verify the ERMT has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated . _____

2. Verify the trailer floor, exterior and tires are acceptable for loading . Any discrepancies must be reported immediately to the transportation supervisor . Any nonconfomances or outstanding DCAR must be resolved before shipment can be released . _____

Comments: _____

_____

3. Visually verify that the sealand containers have been properly tied down with, four straps on each container, chain and 2X4 on front and back of load . _____

4. Visually verify the sealand containers rear doors are secured with a tamper proof DOT approved seal . _____

Container #1:_____Seal number:_____Box #:_____
Container #2:_____Seal number:_____Box #:_____

I hereby certify that the above checklist has been completed and witness that all above information is correct to the best of my knowledge .

Signed :_____
(Certification Personnel)

Date :_____

Signed :_____
(Transportation Supervisor)

Date :_____

Attachment M
Page 1 of 1

BILL OF LADING

STRAIGHT BILL OF LADING — SHORT FORM — ORIGINAL — NOT NEGOTIABLE

CARRIER	DATE	CARRIER'S P.O.	SHIPPER'S NO.

RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

AT FERNALD, OHIO **FROM USDOE, c/o Westinghouse Materials Company of Ohio ACTING UNDER DOE CONTRACT DE-AC05-86OR21600**

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western and Illinois Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back hereof, set forth in the classification or tariff which govern the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee — For purposes of notification only)

Consigned to: _____

Destination: _____ State of: _____ County of: _____

Route: _____

Delivering Carrier: _____ Vehicle No.: Trs. #

Car Initial: _____ Car No.: _____ Seal No.: FA/WMCO

NUMBER PACKAGES	HM	DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	* WEIGHT (Subject to Correction)	CLASS OR RATE	CHECK COLUMN
		IN THE EVENT OF AN ACCIDENT OR EMERGENCY, NOTIFY THE DOE EMERGENCY OPERATIONS CENTER, OAK RIDGE, TN — 615-576-1005, COLLECT, DAY OR NIGHT.			

Subject to Section 7 of Conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

WMCO
(Signature of consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received $ _____ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(The signature here acknowledges only the amount prepaid.)

Charges Advanced:

$ _____

* If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ Per _____

+ THIS SHIPMENT IS CORRECTLY DESCRIBED.
CORRECT WEIGHT IS _____ LBS
SUBJECT TO VERIFICATION BY THE E. W. & I. BUREAU NATIONAL WT. AGREEMENT

* Shipper's interest in law or statute not a part of bill of lading approved by the Interstate Commerce Commission.

741 NO.: _____

SS - SO NO.: _____

MSO NO.: _____

EQUAL EMPLOYMENT OPPORTUNITY — The nondiscrimination clauses contained in section 202 of Executive Order 11246 relative to equal employment opportunity for all persons without regard to race, creed, color, or national origin, and the implementing rules and regulations of the President's Committee on Equal Employment Opportunity which, to the extent not inconsistent with Executive Order 11246, remain in full force and effect as those of the Secretary of Labor, are incorporated herein.

THIS SHIPMENT is subject to the terms and conditions set forth in the standard form of the U. S. Government bill of lading and to any available special rates or charges.

* This shipment is the property of and the freight charges are assumed by the U. S. Government. Subject to the provisions of Section 10721 Quotation No. (Tender No. _____ Effective _____).
* IT IS UNDERSTOOD AND AGREED THAT THIS SHIPMENT IS MADE BY THE CONSIGNOR FOR AND ON BEHALF OF THE U. S. GOVERNMENT; THAT THE CONSIGNOR IS AUTHORIZED TO AND WILL MAKE ANY PAYMENT DUE HEREUNDER AS CONSIGNOR OR SHIPPER FROM GOVERNMENT FUNDS ADVANCED AND AGREED TO BE ADVANCED TO IT BY THE U. S. DEPARTMENT OF ENERGY AND NOT FROM ITS OWN ASSETS; AND THAT NOTHING HEREIN SHALL PRECLUDE LIABILITY OF THE GOVERNMENT FOR ANY PAYMENT PROPERLY DUE HEREUNDER IF FOR ANY REASON SUCH PAYMENT IS NOT MADE BY THE CONSIGNOR FROM SUCH GOVERNMENT FUNDS
* THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

USDOE, c/o Westinghouse Materials Company of Ohio, shipper

Per _____

Permanent post office address of shipper,

P. O. BOX 398704 CINCINNATI, OHIO 45239
AREA CODE 513 738-6200

Agent

Per _____

MPC-ADMS-462 (REV. 8/19/86)

Attachment N
Page 1 of 1

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

6054

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

(Rev.12/06/89)

Carrier:_____ Trailer No. :_____ Shipment No. :_____

Initials

1. Verify the RST has surveyed the trailer/vehicle and recorded results on Vehicle Radiation Monitoring Report (Form FMPC-ES&H-1596-1). _____

2. Verify the proper placards are in place, as required. _____

3. Verify the driver has performed a safety inspection of vehicle prior to leaving the FMPC: _____

   headlights _____ horn _____
   turn signals _____ tires _____
   brake lights _____ braking check test (optional) ____

4. Verify the envelope with Manifest and Tally Sheets is in trailer. _____

5. Verify that a seal has been placed on the trailer doors and that the trailer number and seal number match the trailer and seal number recorded on the Bill of Lading. Report all discrepancies to the Traffic Manager. _____

   Seal Number: _____

6. Verify all lot markings and weights on the Tally Sheet match the lot markings and weights on the Shipping Order. _____

Date Shipped: _____ Time Shipped: _____

I hereby certify that the above items have been verified and are correct to the best of my knowledge.

Signed:_____ Date:_____
(Waste Certification Personnel)

NOTE: UPON SATISFACTORY COMPLIANCE WITH THE ABOVE CHECKLIST CERTIFICATION PERSONNEL SHOULD SIGN THE SHIPPING ORDER AT THE SPACE MARKED "QUALITY CONTROL APPROVAL".

Attachment O
Page 1 of 1

SHIPPING ORDER FOR NUCLEAR MATERIAL

NOTE Spaces marked "A" are for use of classification stamps when required

Westinghouse Materials Company of Ohio

SHIPPING ORDER FOR NUCLEAR MATERIAL

A

Date Prepared: _____

SHIP TO:	ROUTING:			SHIPPERS AUTHORIZATION NO.:	SHIPPING ORDER NO.:
STREET:	PREPAID:	CAR OR TRAILER NO.:	SEAL NO.:	SHIPPED FROM PLANT:	ORIGINATOR NO.:
CITY: STATE:	COLLECT:	BILL OF LADING NO.:	QUALITY CONTROL APPROVAL:		DATE SHIPPED:
SPECIAL INSTRUCTIONS:		COUNTRY CONTROL NO.:	PROJECT NO.:		TIME SHIPPED:

Type of Material _____ FMPC Production Order No. _____ Originator's Signature _____

Station RIS _____ DOE 741 No _____ Shipment Authorized By _____ NUCLEAR MATERIALS REPRESENTATIVE

NMC DATA			ORIGINATOR'S DATA						MATERIAL CONTROL DATA							
FROM MBA	COST CODE	741 NO	P O NO	LOT NUMBER	QUANTITY	WEIGHT (LBS) GROSS	TARE	NET	ANAL CODE	ELE ANAL	ELE LBS	ELE GRAMS OR KGS	LIMIT ERROR ELE	ISO ANAL	U^{235} GRAMS OR KGS	LIMIT ERROR ISO

DISTRIBUTION OF COPIES			
1	NMA (RECORD COPY)	5	Cost Accounting
2	Shipping Group	6	Originator of Shipping Order
3	Quality Control		
4	Production Control	1	

NT 558 (REV 8/8/89)

I, _____ certify that this shipment was made on the above date after complying with all security regulations

A

Audited by _____ Date _____

A

Attachment P
Page 1 of 1

WASTE CERTIFICATION TRAFFIC SHIPMENT DOCUMENTATION CHECKLIST

6054

Waste Certification Traffic Shipment Document Checklist

	Bill/Lading(B/L)	Shipping Order(S.O.)
Ship #	_____	_____
B/L#	_____	_____
S.O.#	_____	_____
Trailer#	_____	_____
Date Prep	_____	_____
Mat.Type	_____	_____
Gross Wt.	_____	_____
Tare Wt.	_____	_____
Net Wt.	_____	_____
E.T.A.	_____	_____
Seal #	_____	_____
MCA sign	_____	_____
# of cont.	_____	_____
LSA/LQ/RQ	_____	_____

	Low Level Checklist		Packaging Information	
Ship #	_____		Hazard Class	_____
B/L #	_____		Material Form	_____
S.O.#	_____		Chemical Form	_____
All Checks	_____		Labels Required	_____
3 sign	_____		Packaging Type	_____

Radiation Monitoring Sheets

	Empty	Outgoing	Survey	Cab
Trailer#	_____	_____	_____	_____
Date/Time	_____	_____	_____	_____
Survey com.	_____	_____	_____	_____

*Complete liscense # _____
*Temporary Seal # _____

Container Radiological Sheets

	Date	Time	Data Complete	Ship #
Initials	_____	_____	_____	_____
Resmears	_____	_____	_____	_____

	Off Site Tie Down		Contaminated Articles Sheet	
Ship #	_____		Curies	_____
Trailer #	_____		Signature	_____
Seal #	_____		Data Complete	_____
Sup.Sign	_____			

*3 Tally Sheets & 1 Storage/Disposal Sheet present _____
*Driver Inst. Pack complete and numbered _____
*Weight Ticket *Ft. Axle_____* Rear Axle_____* GR. Wt._____
(Maxium weight on front or rear axle 34,000 lbs.)

Attachment Q
Page 1 of 1

LLW SHIPMENT CHECKLIST

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS - TRANSPORTATION SECTION
LLW SHIPMENT CHECKLIST & NTS NOTIFICATION

DATE:	SHIPMENT NO.:	B/L NO.:	SS SO NO.:	CARRIER:	TRAILER NO.:

	LSA	DEPARTURE TIME:	ETA:	NOTIFICATION TO N ☐ (FTS: 575-63
	RQ	FROM:		
	LTD. QTY.	TO:		
	DRUMS	DATE:		
	WASTE CERTIFICATION CONTAINER TOTALS, WEIGHTS & CURIES OF LSA/LTD QTY - RQ SHEETS	BY WHOM:		
	BOXES	TO WHOM		
	SMEAR SHEETS	☐ FACSIMILE SENT	☐ DRIVER GIVEN DOSIMETER BAC	
	WASTE MANAGEMENT STORAGE & DISPOSAL SHEETS DELIVERED — PER NTS	MONITORING REPORTS:		
	TALLY SHEETS			
	CARRIER/DRIVER INSTRUCTION PACK (2)			
	NEVADA PERMIT			
	INCOMING/EMPTY BEFORE LOADING			
	OUTGOING/LOADED			
	TRACTOR CAB			
	OFFSITE LOADING-TIE DOWN-VEHICLE INSPECTION REPORT			
	WEIGHT TICKET			
	CHECKED TALLY SHEET (BY CHECKER)			

DRIVER RECEIVES:
COPY OF B/L, TALLY SHEET, INSTRUCTION PACK, NEVADA PERMIT, & ENVELOPE FOR CONSIGNEE WITH TALLY SHEET & MEMO B/L

SPECIALIST A/TRAFFIC:	TRANSPORTATION SUPERVISOR: (REVIEW)	TRAFFIC MANAGER: (REVIEW)

	CONDITION OF CONTAINERS	LOADERS:
	CONTAINER PROPERLY LABELED	
	RADIOACTIVE PLACARDS (FOR LSA ONLY)	
	ENVELOPE WITH STORAGE & DISPOSAL SHEETS AND TALLY SHEETS IN TRAILER	
	TRAILER LINED WITH PLASTIC & CARDBOARD ON FLOOR— SCRAP WOODEN PALLETS AND/OR BOXES ENCLOSED WITH PLASTIC AS ONE PACKAGE	
1	sportation Supervisor: _____	

Attachment S
Page 1 of 1

OFF-SITE LOADING TIE-DOWN INSPECTION - VEHICLE INSPECTION FORM

6054

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS DEPARTMENT - TRANSPORTATION SECTION

OFFSITE LOADING — TIE DOWN INSPECTION — VEHICLE INSPECTION

Date: _____

COMMODITY:	CARRIER:	TRAILER NO.:	SEAL NO.:
			FA-WMCO

BALE/BOX/DRUM/SEA LAND CONTAINER NUMBERS:

LSA _____
LSA-RO _____
LQ _____
LQ-RO _____
TOTAL _____

DISCREPANCIES DETECTED	CORRECTED YES	CORRECTED NO	SHIPMENT REJECTED YES	SHIPMENT REJECTED NO

Checked By _____
SIGNATURE - CHECKER

TIE-DOWN INSPECTION AND CHECK-OFF SHEET

INSPECTION ITEM	YES	NO
Wood shoring installed to prevent longitudinal or lateral movement		
Steel strapping around the cargo securing as a stable shipment		
When weight dictates, containers divided into two units, one front and one rear of trailer not exceeding approximately 20,000 pounds each		
1¼" steel strapping utilized (5450 lbs. minimum tensile strength)		
____ each anchor plates or "U" bolts fastened to underframe (____ each side of unit) placed and secured for ____ transverse bands over unit		
Four each brakeman plates or "U" bolts fastened to underframe (two for each band) placed under each unit and secured for two longitudinal bands, securing the boxes/skids into one tight unit, anchored to the floor of the trailer		
Two Signode seals No. 107 crimped whenever two bands are used on an end over end lap joint		
Anchor and brakeman plates secured with eight each 2" nails		
Sea Land Containers ..... 4 each nylon straps		
..... Chains		
..... 2 X 4s		

VEHICLE INSPECTION REPORT

CONDITION	PASS	FAIL	CONDITION	PASS	FAIL	CONDITION	YES	NO
Condition of Floor			Condition of Sides			Detected Sabotage Devices		
Condition of Interior			Condition of Exterior					
Condition of Roof			Condition of Rear Doors			Detected Evidence of Sabotage		

Overall appearance: _____

General Comments: _____

Accepted: _____ Rejected: _____

Checked By: _____
SIGNATURE - TRANSPORTATION SUPERVISOR

NO.	DISTRIBUTION OF COPIES
	Transportation Section (RECORD COPY)

FMPC-SAML-2495 (REV. 4/5/89)

000410

WASTE SHIPMENT VERIFICATION CHECKLIST

WASTE SHIPMENT VERIFICATION

Date_____ Time _____

Shipment No. WML-_____ Trailer No._____ No./Type Container_____

1. Storage & Disposal Data Sheet

   A. Material Descsription_____
   B. Signed _____ Shipment No. WML-_____
   C. Total Curries _____
   D. Total Weight(Gross)_____
   E. Total Volume _____
   F. Type Container _____
   G. Date _____ Time _____
   H. Check of "G" for all copies _____

2. Tally Sheet

   Shipment No. WML-_____ Date _____ Time _____
   Check of Date & Time of all copies in Pkg. _____

A. Lot Number	Gross Weight	Net Weight
Totals		

   B. Total containers _____ Totals agree with "1" above _____
   C. Field check of Tally Sheet included _____

3. Shipping Order for Nuclear Material (FMPC-ES&H-558-3 REV. 1/29/87)

   A. Shipping Order No. _____ B/L No. _____
   B. 741 No. FVC-VAB _____ Seal No. FA-WMCO_____
   C. Trailer No. _____ MC & A Signed _____
   D. Material Type _____
   E. Lot Nos. agrees with Tally Sheet _____ Total Quantity _____
   F. Gross Weight _____* Element Analysis _____*
   G. Tare Weight _____* Element Lbs. _____*
   H. Net Weight _____* Element Grams or Kgs _____*
   I. Iso Analysis _____* U235 Grams or Kgs _____*
   J. Est. Time of Arrival _____
   K. *Totals (listed) & Individual Lot values (not listed) agree with Tally Sheet. _____

4. Bill of Lading

   B/L No. _____ Trailer No. _____ Seal No.FA/WMCO_____
   741 No.FVC-VAB- _____ SS-SO No. _____
   ETA : _____
   Number of containers:

		Type Container	Gross Wt.	Net Wt.
LSA _____	RQ _____			
	NON-RQ _____			
LQ _____	RQ _____			
	NON-RQ _____			
Totals	_____			

   _____ Above information agrees with Shipping Order & Tally Sheet.
   _____ Remainder of information of Bill of Lading checked.

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WASTE SHIPMENT VERIFICATION CHECKLIST
(continued)

WASTE SHIPMENT VERIFICATION

5. Low Level Waste Shipment Checklist and NTS Notification Form

   A. Shipment No. WML-_____ B/L No. _____
      SS-SO No. _____
   B. Data on line 5A agrees with B/L and Shipping Order _____
   Completed except for Departure Time and Traffic Manager review _____

6. Radiation Monitoring Sheet (FMPC ES&H-1596-1) For:
   A. Trailer Empty _____ Trailer ID _____
   B. Trailer Loaded _____ Trailer ID _____
   C. Cab Only _____ Trailer ID _____ License No._____
   D. Loaded Vehicle Radiological Survey _____ Trailer ID _____
   E. Temporary Seal Numbers _____

7. Container Radiological Data
   Initial Dose Rate Data _____ 48 Hour Smears: Date_____Time_____
   Equal to or less than 48 hours prior to Load Time _____

8. Weight Ticket
   Load Weight _____ Rear Axle Wt._____ Drive Wt._____

9. Off-Site Tie-Down Inspection Form (FMPC SAML 2495 REV 4/5/89)
   Shipment No. WML-_____Trailer No._____ Seal No. FA/WMCO_____
   A. Checked and signed in two places _____

10. LSA/RQ, LQ documentation
    One copy in Traffic File package _____
    One copy in envelope for Driver _____
    A. Signed if non-computer report _____
    B. Wt. checks with Tally Sheet _____
    C. Curies checks with Disposal Sheet or Tally Sheet _____

11. Driver Instructions Complete (2 sets) _____
    Tally sheet also in envelope _____
    All Written identity & information checks _____

12. Waste Certification Checklist present, signed and in agreement with other documentation.
    A._____ Waste Certification Preliminary Trailer Checklist

    B._____ Waste Certification Traffic Shipment Documentation Checklist

    C._____ Waste Certification Final Trailer/Vehicle Checklist

Shipping Order signed by Certification Official _____

Shipment released on _____ at _____AM/PM

Signed _____

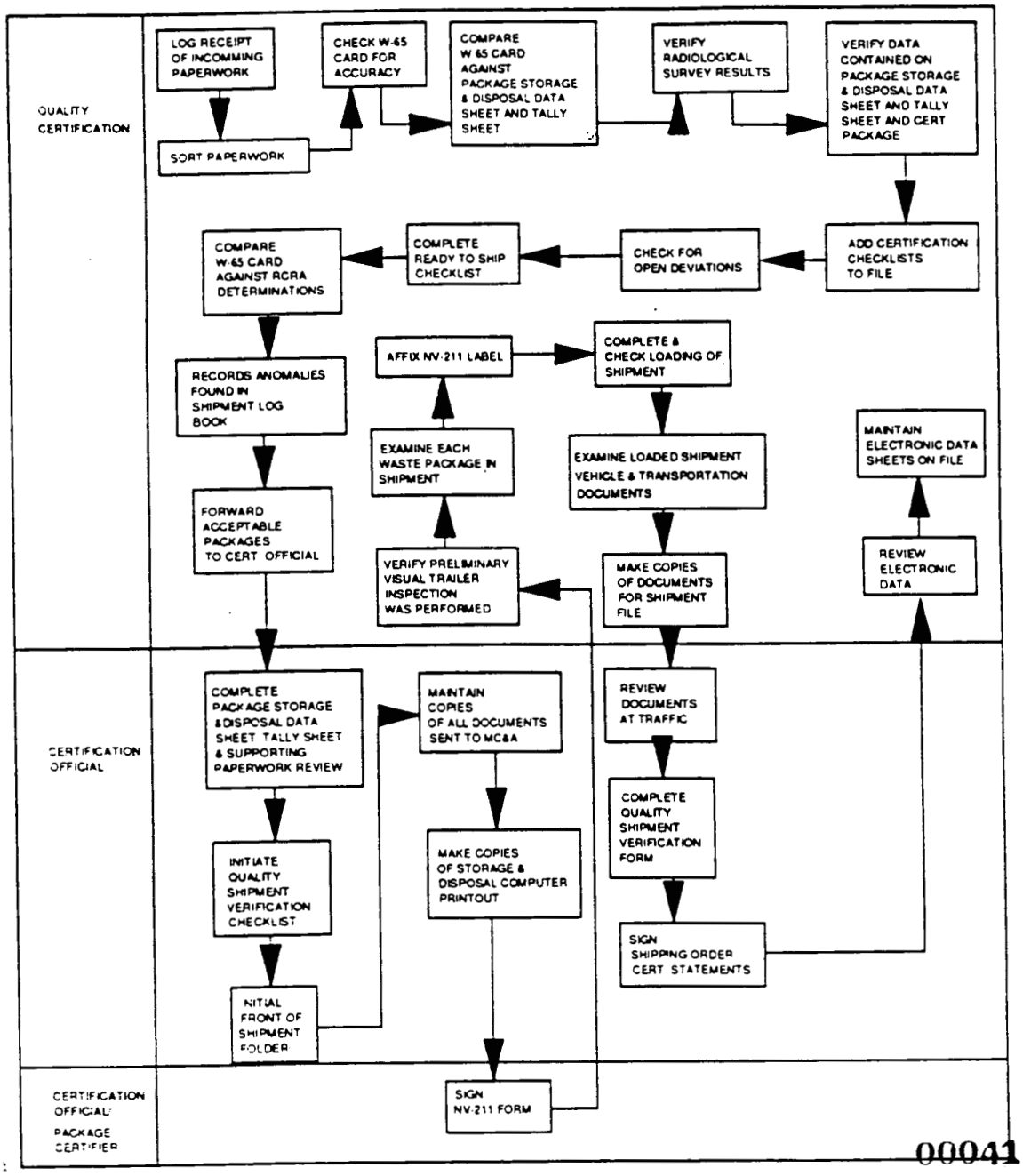
List Nonconformances found:

_____

_____

1.0. SCOPE

This procedures establishes a detailed method for the certification of Low-Level Radioactive Waste packages (L-LRW) for shipment to NTS. For abbreviation, acronyms, and definitions refer to WMCO-EQP-1.05.



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2.0. PROCEDURE

2.1 Event Notification and Reporting Requirements

All unplanned or unwanted events or incidents shall be immediately reported to supervision. In the supervisor's absence [illegible] Emergency Duty Officer (AEDO) shall be notified for proper notification and reporting in accordance with, OM-FMPC-0001, "Event Notification and Reporting."

2.2 Industrial Health and Safety Requirements

All posted safety requirements (such as safety glasses, gloves etc.) and radiological requirements (such as respirators, proper clothing, etc.) shall be complied with in accordance topical manuals FMPC-2128, Industrial Hygiene and Safety Manual and FMPC-2084, Radiation Control Manual.

2.3 Examination and Certification of Incoming Paperwork

Quality Certification

2.3.1 Examine waste shipment paperwork packages prepared by the Waste Shipment Coordinator for accuracy, completeness, and that requirements for compliance with NVO-325 are met prior to forwarding them to MC&A for preparation of Shipping Orders.

2.3.2 Upon receipt of shipment packages from Waste Shipment Coordinator, log receipt of incoming shipment paperwork in the Shipment Log Book, which may be a computer data base. The following minimum data is required to be in the log book or data base:

a. Shipment Number
b. Container Quantity
c. Container Type
d. Material Type
e. Month, Date, and Time of Receipt

2.3.3. Sort paperwork in folder into two groups:

a. Group I is documents that are forwarded to MC&A, which include:

1. Package Storage and Disposal Data sheet.

2. Tally Sheet.

3. Storage and Disposal computer printout (List of the packages with weights and curies for each, grouped by DOT marking category), commonly called the "curie sheet".

4. Storage and Disposal computer printout (List of packages with weights, and required DOT markings), commonly called "circle copy".

5. Radiological Survey Report, form FMPC-IRS&T-1993-1.

6. Shipping Order, Form FMPC-CONT-558.

b. Group II is information pertaining to the shipment but not required by other organizations, which include:

1. Shipment worksheet, and untitled and unsigned document used to collect and process information. This is not part of the official certification record.

2. Waste Shipment Data Special Entry Information. This is not part of the official certification record.

3. Factor Assay data, either a letter or form listing the correct factor assay for a particular shipment.

4. Computer printout data entry sheets.

5. Any worksheets, such as Preparation of Baled Trash Shipment.

6. Item Production/Certification/Identification Card, (W-65 Card) FMPC-Cont-1945-XX.

2.3.4. Check the W-65 Card for accuracy. Check the signatures on the W-65 card to be sure the card has been signed by a properly trained individual. Only original W-65 card, or replacement W-65 cards having verified documentation of required information, are to be accepted for certification.

2.3.5. Compare the W-65 Card against the Package Storage and Disposal Data sheet and Tally Sheet for:

a. material type
b. shipment number
c. package serial number
d. material description
e. lot number
f. package number
g. gross, tare and net weights
h. package description

2.3.6. Verify Radiological Survey Results for packages being shipped are on file, complete and within acceptable limits, and verify accuracy of all entries to extent possible for computer entries made on Data Entry Sheets for items listed above. Radiological Survey Result Limits are:

a. Beta/Gamma radiation levels 200 millirem/hour measured externally at the surface.

b. Alpha emitters 220 DPM/100 cm2

c. Beta/Gamma emitters 2200 DPM/100 cm2

2.3.7 Verify that data contained on the Package Storage and Disposal Data sheet and Tally Sheet correspond with supporting documentation received in the shipment certification package.

2.3.8 Utilizing package serial numbers, obtain completed Quality Certification check lists and add to the file. Verify that all anomalies noted on the check lists have been resolved.

2.3.9 Check to make sure there are no open Deviation Reports, per PP-FMPC-706, against the package (packaging and contents) being shipped.

2.3.10 Compare material descriptions and source information on W-65 card against RCRA determination letters from Environmental Compliance to ensure that only materials approved for release are approved for shipment.

2.3.11 Complete a Ready to Ship Checklist for any Sea/Land containers in the shipment. (Attachment A)

2.3.12 Record anomalies found in the Shipment Log Book, and ensure the respective shipment package is returned to the Waste Shipment Coordinator for resolution.

2.3.13 Forward acceptable shipment packages to a Certification Official.

Certification Official

2.3.14 Complete the "Package Storage & Disposal Sheet, Tally Sheet, and Supporting Paperwork Review Checklist for L-LRW" (Attachment B). This becomes part of the shipment paperwork file retained in Quality Certification. If the shipment is unusually complex or non-routine, a second Certification Official may be asked to check the shipment paperwork, and will either fill out a new check list, or countersign the first Certification Official's checklist. The second check need only include as many checks as deemed necessary to provide confidence that the paperwork package is acceptable.

2.3.15 Sign and date the Package Storage and Disposal Data sheet signifying the paperwork is acceptable and can be forwarded to MC&A to initiate shipment.

2.3.16 Complete sections 1 and 2 of the Quality Shipment Verification checklist (Attachment C). It is filed separately from the shipment file and is kept ready for use at Traffic. A blank copy of the Certification Statement (Attachment D), the Certification Statement Specific to Hazardous Waste (Attachment E), and a copy of the Package Storage and Disposal Data Sheet are attached to this form along with any additional original documents which will accompany the shipment to NTS.

2.3.17 Initial the front of the shipment folder indicating the date and time the package was approved.

2.3.18 Maintain in the shipment certification file copies of all documents sent to MC&A.

NOTE: Documents from the certification paperwork package required by MC&A, are either faxed to MC&A (# 6454), delivered to the recipient within the group, or delivered to a designated pick-up point. The time of transmittal is recorded on the certification file folder and in the Shipment Log book.

2.3.19 Make copies of the Storage and Disposal computer printout (list of packages with weights, and required DOT markings), the Package Storage and Disposal Data sheet, and the Tally Sheet for Quality Certification persons checking packages prior to loading of shipment.

Certification Official/Package Certifier

2.3.20 Either the Certification Official or the Package Certifier can sign NV-211 Certification labels (Attachment F) for the shipment as follows:

a. When Certification Official signs NV-211 labels:

Certification Official

1. Sign NV-211, identify the packet of labels with the shipment number, and enter in the Chain of Custody Log book (Attachment G) the Quality Certification person responsible for affixing them to the containers.

Quality Certification

2. Sign in the log book acknowledging receipt of signed NV-211 labels. Any damaged, replaced, or unused labels (e. g. canceled shipments) are to be returned, and a record of return is to be made in the log book. The Certification Official signing the labels signs to acknowledge receipt, or in their absence, another Certification Official may sign for the labels, but must immediately destroy them.

b. When the Package Certifier signs NV-211 labels:

1. Sign as needed to affix to each package. Any damaged, replaced, or unused labels are to be destroyed.

2.4 <u>Waste Packages and Shipment Vehicle</u>

Quality Certification

2.4.1 Complete examination of waste packages, shipment vehicle, and check loading of shipment.

Note : Detailed instructions for each of the following checklists are found in WMCO-EQP-12.04 "Certification of Loading and Shipment of Low-Level Radioactive Waste".

2.4.2 Verify that a Preliminary Visual Trailer Inspection was performed by WEMCO mechanics. Examine the transport trailer/vehicle and complete either the "Waste Certification Preliminary Trailer Checklist for Flat Beds" (Attachment H) or the "Waste Certification Preliminary Checklist for Vans" (Attachment I) as applicable. The checklist becomes part of the shipment certification file.

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2.4.3 Examine each waste package in the shipment. Each package prior to loading is checked for agreement with the information on the approved Package Storage and Disposal Data sheet, the Tally Sheet, and the Storage and Disposal computer printout list of packages, weights, and DOT markings. When this agrees, and criteria listed in EQP-12.04 are met, affix a properly completed and signed NV-211 certification label on each package.

2.4.4 Examine the loaded shipment vehicle after it has been sealed, weighed, monitored, and moved to traffic, take photographs, and complete the "Quality Certification Final Vehicle/Trailer Checklist" (Attachment J) which becomes part of the shipment certification file.

2.4.5 Examine the Transportation documents as listed in EQP-12.04 for accuracy and completeness. Complete the "Quality Certification Traffic Shipment Documentation Checklist" (Attachment K) which becomes part of the shipment certification file.

2.4.6 Make copies of the following documents and make them part of the shipment file:

a. Waste Certification Final Trailer Checklist

b. Waste Certification Traffic Shipment Document Checklist

c. Shipping Order for Nuclear Material

d. Radiological Survey Results (48-Hour Smears) if original is not already in file

f. Out going vehicle Radiation Survey

g. Out going vehicle Radiation Monitoring Sheet

2.5 <u>Shipping Papers</u>

Certification Official

2.5.1 Review the following documents for accuracy and completeness at Traffic :

a. Shipping Order for Nuclear Material
b. Bill of Lading
c. Low Level Waste Shipment Checklist and NTS Notification Form
d. Vehicle Radiation Monitoring Reports
e. Radiological Survey Report for results of smear samples of packages.

f. Weight Ticket
g. Off-Site Tie Down Inspection Form
h. LSA/RQ, LQ Documentation
i. Drivers Instructions
j. Waste Certification checklists

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2.5.2 Complete the "Quality Shipment Verification Form" form and list any nonconformances. This becomes part of the shipment certification file.

2.5.3 Sign and date the Shipping Order, in the space provided for Quality Certification, when all documents are complete and accurate.

2.5.4 Sign the Certification Statement. The original and one copy are given to Traffic. One copy is retained and becomes part of the shipment certification file.

2.5.5 Sign the Certification Statement Specific to Hazardous Waste. The original and one copy are given to Traffic. One copy is retained and becomes part of the shipment certification file.

2.5.6 Fax the Certification Statement Specific to Hazardous Waste, the Package Storage and Disposal Data Sheet, and a Facsimile Service form to NTS per the directions on the Facsimile Service form two days prior to the shipment's arrival at NTS. This is to be followed by a phone call to NTS to verify the receipt of this information.

NOTE: The Facsimile Service form or a variation thereof is to be used for faxing. Instructions for faxing to DOE/NV may be found near the fax machine. If problems are encountered in faxing the above information, inform the Quality Certification Manager, or if unable to do so, contact DOE/NV by telephone (number on fax form) for instructions. Make a note on the Facsimile Service form of failure to transmit, and log the date, time, and name of person contacted by telephone at DOE/NV.

2.6 Electronic Data Transfer Sheet

Quality Certification

2.6.1 Receive the electronic transfer data sheet from the Shipping Coordinator.

2.6.2 Review electronic transfer data sheet for accuracy. Data must agree with the approved respective Package Storage and Data Disposal report and comply with the requirements of Reynolds Electrical & Engineering Company's, Inc. (REECO) Defense Low Level Waste Information System Data Transmission Guide. If not acceptable, return it to the shipping coordinator for clarification or correction and resubmittal.

2.6.3 Maintain a file for the electronic data sheet.

3.0 REFERENCES

3.1 NVO-325 "Nevada Test Site Defense Waste Acceptance Criteria, Certif and Transfer Requirements"

3.2 WMCO:EQP-1.05 "Abbreviations, Acronyms, and Definitions"

3.3 PP-FMPC-706 "Deviation and Corrective Action Reporting"

3.4 WMCO-EQP-12.04 "Certification of Loading and Shipment of Low-Level Radioactive Waste

3.5 OM-FMPC-0001 "Event Notification and Reporting"

3.6 FMPC-2128 "Industrial Hygiene and Safety Manual"

3.7 FMPC-2084 "Radiation Control Manual"

4.0 ATTACHMENTS

4.1 Attachment A, Quality Certification Checklist Sea/Land Container "I Ship"

4.2 Attachment B, Package Storage and Disposal Data Sheet, Tally Sheet Supporting Paperwork Review Checklist for L-LRW

4.3 Attachment C, Quality Waste Shipment Verification Form

4.4 Attachment D, Certification Statement

4.5 Attachment E, Certification Statement Specific to Hazardous Waste

4.6 Attachment F, NV-211 Certification Labels

4.7 Attachment G, Example of Chain of Custody Log used to issue NV-211

4.8 Attachment H, Quality Certification Preliminary Trailer Checklist Beds

4.9 Attachment I, Quality Certification Preliminary Trailer Checklist

4.10 Attachment J, Quality Certification Final Trailer/Vehicle Checklis

4.11 Attachment K, Quality Certification Traffic Shipment Document Chec

4.12 Attachment L, Facsimile Service Form

Attachment A
Page 1 of 1

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QUALITY CERTIFICATION CHECKLIST
SEA/LAND CONTAINER "READY TO SHIP"

INFORMATION

DATE: _____ SHIPMENT NUMBER: _____

MTL. TYPE: _____ BOX ___ Serial No.: _____

MTL. TYPE: _____ ___ Serial No.: _____

LOCATION : _____ WEIGHTS: Gross _____ BOX 1 _____ BOX 2

_____ Tare _____ _____

_____ Net _____ _____

EXAMINATION CRITERIA (Quality Certification)

Trailer No.: _____ Initials

1. Verify "Item Production/Certification/Identification" W-65 card is completed accurately. (Form FMPC-ES&H-1945-XX) _____
2. Container does not show evidence of leaking. _____
3. Radioactive placards present. (4 sides) _____
4. No holes, serious dents, or excessive rust. _____
5. Marking is complete as follows:
   - Proper shipping label(s) identified on three sides (LSA, RQ, LQ) _____
   - Gross weight identified _____
   - Shipment Number _____
   - Waste Stream Number _____
   - Container Number _____
   - FEMP Marking Code _____
6. Marked weight values match above values. _____
7. The doors are latched, sealed with caulking, and the two latch bars are banded together. _____
8. Seal number Box #1_____ affixed to container. _____

   Box #2_____
9. All unnecessary markings have been removed or covered. _____

PLACE NV-211 ON DOOR OF CONTAINER WHEN ABOVE CRITERIA IS SATISFACTORILY MET.

I hereby certify the above items have been examined and the above items are correct to the best of my knowledge.

Signed:_____ Date: _____
(Quality Certification)

ECQ-880930-1, Rev. 3 (08/26/91)

EXHIBIT

PACKAGE STORAGE & DISPOSAL SHEET, TALLY SHEET, AND SUPPORTING PAPERWORK REVIEW CHECKLIST FOR L-LRW

Shipment No. _____

Review the paperwork for the following requirements:	Approval Check
Shipment No. agrees with LLW shipping report.	_____
Waste Stream number present and correct.	_____
Waste material description present and accurate.	_____
W-65 cards are correct for each container.	_____
Lot No. agree with LLW shipping report.	_____
Lot Code agrees with LLRW shipping report material description.	_____
Lot enrichment code agrees with U-235 analysis.	_____
U Assay, U-235, & U-238 concur with approved values. (from Analytical or approved in writing by MC&A)	_____
No unusual analysis dates (If so, check).	_____
Container type code listed and accurate.	_____
Proper waste code is entered.	_____
Combustibility percent listed and appropriate for contents.	_____
Gross weights agree with LLRW shipping report.	_____
Gross weights do not exceed the maximum gross weight per container type.	_____
Tare weights agree with LLW shipping report.	_____
Net weights agree with LLW shipping report.	_____
Net + Tare = Gross	_____
Inner container identity numbers check.	_____
Outer container identity numbers check.	_____
Total number of containers agrees with LLRW shipping report.	_____

EXHIBIT

ECQ-881115-2, Rev. 2 (07/30/91)

054

PACKAGE STORAGE & DISPOSAL SHEET, TALLY SHEET, AND
SUPPORTING PAPERWORK REVIEW CHECKLIST FOR L-LRW (Continued)

	Approval Check
Total containers correct on Storage & Disposal Sheet.	_____
Package description correct on Storage & Disposal Sheet.	_____
Correct volume listed for outer container.	_____
Gross volume is correct for shipment.	_____
Checked conversion from English to Metric units.	_____
Radiological Survey results present.	_____
Rad Survey at Contact is not greater than 200 mR/hr.	_____
Rad Survey at 3 ft is not greater than 10 mR/hr.	_____
No unusual values or arrangement indicating computer error.	_____
LQ, RQ, & LSA designations correct on Curie List. (If not, verify correct curie list is issued)	_____
LSA, LQ, & RQ list for loading correct and in agreement with Curie List. (Non-process contaminated materials are always LSA.	_____
Appropriate preparer signature on Storage & Disposal Sheet.	_____
Checked against RCRA letters and found to be non-RCRA.	_____
Partially completed Shipping Order included in folder.	_____

EXHIBIT

I hereby certify the above criteria has been verified to be correct, to the best of my knowledge.

Signature: _____

Date: _____

ECQ-881115-2, Rev. 2 (07/30/91)

Attachment C
Page 1 of 2

QUALITY WASTE SHIPMENT VERIFICATION

Page 1 of 2

Date_____ Time _____

Shipment No. WML-_____ Trailer No._____ No./Type Container_____

1. **Storage & Disposal Data Sheet**
   A. Material Descsription_____
   B. Signed _____ Shipment No. WML-_____
   C. Total Curries _____
   D. Total Gross Weight (Lbs.)_____ (Kgs)_____
   E. Total Volume (Cu Ft) _____ (Cu Meters)_____
   F. Type Container _____
   G. Date _____Time _____
   H. Check of "G" for all copies _____

2. Tally Sheet
   Shipment No. WML-_____ Date _____ Time _____
   Check of Date & Time of all copies in Pkg. _____
   A. Lot Number | Gross Weight | Net Weight
   _____ _____ _____
   _____ _____ _____
   _____ _____ _____
   _____ _____ _____
   Totals _____ _____
   B. Total containers _____ Totals agree with "1" above _____
   C. Field check of Tally Sheet included _____

3. **Bill of Lading (FMPC PM&A-452 Rev 2/12/91)**
   B/L No._____ Trailer No._____ Seal No.FA/WMCO_____
   741 No.FVC-VAB- _____SS-SO No._____ _____
   ETA : _____
   Number of containers:

		Type Container	Gross Wt.	Net Wt.
LSA _____	RQ _____	_____	_____	_____
	NON-RQ _____	_____	_____	_____
LQ _____	RQ _____	_____	_____	_____
	NON-RQ _____	_____	_____	_____
Totals	_____		_____	_____

   _____ Above information agrees with Shipping Order & Tally Sheet.
   _____ Remainder of information of Bill of Lading checked.

4. **Shipping Order for Nuclear Material (FMPC-ES&H-558-3 REV. 1/29/87)**
   A. Shipping Order No. _____ Trailer No. _____
   B. Bill of Lading No. _____ Seal No. FA-WMCO_____
   C. 741 No. FVC-VAB _____ MC & A Signed_____ _____
   D. Material Type _____
   E. Lot Nos. agrees with Tally Sheet _____ Total Quantity _____
   F. Gross Weight _____* Element Lbs. _____*
   G. Tare Weight _____* Element Grams or Kgs _____*
   H. Net Weight _____* Iso. Analysis _____*
   I. Element Analysis _____* U235 Grams or Kgs _____*
   J. Est. Time of Arrival _____
   K. *Totals (listed) & Individual Lot values (not listed) agree with Tally Sheet. _____

EXHIBIT

ECQ-890601-1, Rev.1, (08/04/91)

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QUALITY WASTE SHIPMENT VERIFICATION

5. Low Level Waste Shipment Checklist and NTS Notification Form
   A. Shipment No. WML-_____ B/L No. _____
      SS-SO No. _____
   B. Data on line 5A agrees with B/L and Shipping Order _____
   Completed except for Departure Time and Traffic Manager review _____

6. Radiation Monitoring Sheet (FMPC ES&H-1596-1) For:
   A. Trailer Empty _____ Trailer ID _____
   B. Trailer Loaded _____ Trailer ID _____
   C. Cab Only _____ Trailer ID_____ License No._____
   D. Loaded Vehicle Radiological Survey _____ Trailer ID _____
   E. Temporary Seal Numbers _____
   F. Garage inspection attached _____

7. Container Radiological Data
   Initial Dose Rate Data _____ 48 Hour Smears: Date_____Time_____
   Equal to or less than 48 hours prior to Load Time _____

8. Weight Ticket
   Load Weight _____ Rear Axle Wt._____ Drive Wt._____

9. Off-Site Tie-Down Inspection Form (FMPC SAML 2195 REV 4/5/89)
   Shipment No. WML-_____Trailer No._____Seal No. FA/WMCO_____
   A. Checked and signed in two places _____ _____

10. LSA/RQ, LQ documentation
    One copy in Traffic File package _____
    One copy in envelope for Driver _____
    A. Wt. checks with Tally Sheet _____
    B. Curies checks with Disposal Sheet or Tally Sheet _____
    C. Tally Sheet also in envelope _____
    D. Weight ticket in/with envelope (2 copies) _____

11. Driver Instructions Complete (2 sets) _____
    All Written identity & information checks _____

12. Waste Certification Checklist present, signed and in agreement with other documentation.
    A._____ Waste Certification Preliminary Trailer Checklist

    B._____ Waste Certification Traffic Shipment Documentation Checklist

    C._____ Waste Certification Final Trailer/Vehicle Checklist

Shipping Order signed by Certification Official _____

Shipment released on _____ at _____AM/PM

Signed _____

List Nonconformances found:

_____

_____

ECQ-890601-1, Rev 1, (08/04/91)

EXHIBIT

CERTIFICATION STATEMENT

Shipment No. WML-91-_____ Trailer No. _____

Bill of Lading No. _____ Seal No. _____

This is to certify that the herein named materials are properly classifies, described, packaged, marked and labeled, are in proper condition for transportation according to the applicable regulations of the Department of transportation, and that the shipment meets DOT and EPA requirements. Except for exemptions approved by DOE/Nevada, and data that is being transmitted in the same format and content as that for preceding shipments, this shipment and all packages contained therein meets NVO-325 requirements.

EXHIBIT

_____
FMPC Certification Official

Date: _____

Quality Certification Form

ECQ-900914-1, Rev. 2 (08/06/91)

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CERTIFICATION STATEMENT SPECIFIC TO HAZARDOUS WASTE

This is to certify that the packages itemized in the attached list for Shipment No. WML-91-_____ contain no hazardous waste as determined by 40 CFR Part 261.30, and OAC 3745-54.

_____
FMPE Certification Official

Date: _____

EXHIBIT

Quality Certification Form
ECQ-900914-2, Rev. 2 (08/06/91)

NV-211 LABELS

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: CERTIFICATION OFFICIAL

ORGANIZATION: FMPC

FMPC-O&S-234 (REV 9/7/89)

EXHIBIT

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: PACKAGE CERTIFIER

ORGANIZATION: FMPC

FMPC-O&S-234-1 (REV 9/7/89)

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CHAIN OF CUSTODY LOG
FOR
ISSUE & RECEIPT OF SIGNED NV-211 LABELS

DATE	SHIPMENT NUMBER	LABELS ISSUED	ISSUED BY (SIGNATURE)	NUMBER RECD.	RECEIVED BY (SIGNATURE)	LABELS RETURNED	RECEIVED BY (SIGNATURE)

EXHIBIT

QAC-890712-1, REV. 0

Attachment H
Page 1 of 1

QUALITY CERTIFICATION - PRELIMINARY TRAILER CHECKLIST FOR FLAT BEDS
(SEA/LAND SHIPMENTS)

DATE: _____ CARRIER: _____ TRAILER NO.: _____

CHECKLIST ITEM	VERIFIED BY
1. Verify the preliminary trailer inspection completed (on trailer only) prior to driver unhooking from the empty trailer: Accepted _____ Rejected _____	_____
2. Prior to loading verify the RS Technician has surveyed the empty trailer, recorded results on Form E98H-1596-1, and that results meet acceptance requirements listed in 49 CFR 173.441. (Note: If over 48 hrs. since smears were made, the trailer must be resmeared.)	_____
3. Verify that the doors of the Sea/Land containers are banded closed and secured with a tamper proof DOT approved seal.	_____
4. Verify that packages are properly tied-down as specified by SOP-TRF-46-C-110. Sea/Land containers shall be secured with four straps on each container, and shall be both chained and blocked with a 2X4 on front and back of load.	_____
5. Record shipping information in the blocks below:	_____

Shipment No. WML- _____ - _____

Container No. 1: Ser. No. _____ Seal No. _____

Container No. 2: Ser. No. _____ Seal No. _____

Signed: _____ Date: _____
(Quality Certification)

Distribution: 1. QA Certification 2. Traffic Manager

QA Certification Form
ECQ-891010-1, Rev. 3 (07/31/91)

EXHIBIT

Attachment I
Page 1 of 1

6054

QUALITY CERTIFICATION - PRELIMINARY TRAILER CHECKLIST FOR VANS

DATE: _____ CARRIER: _____ TRAILER NO.: _____

CHECKLIST ITEM	VERIFIED BY
1. Verify preliminary trailer inspection completed (on the trailer only) prior to driver unhooking from the empty trailer: Accepted ____ Rejected ____	_____
2. Verify the RS Technician has surveyed the empty trailer, recorded results on Form ES&H-1596-1, and results meet acceptance requirements listed in 49 CFR 173.441.	_____
3. After the survey, verify the RS Technician has sealed the doors with a tamper proof seal. Seal No. _____	_____
4. Prior to loading, verify seal number is same as applied by RS Technician and shows no evidence of tampering.	_____
5. If trailer is to be loaded with baled trash, verify the trailer has been lined properly as specified per SOP-TRF-46-C-110.	_____
6. Verify that packages have been properly tied-down as specified by SOP-TRF-46-C-110.	_____
7. Verify that the loaded trailer rear doors are secured with a tamper proof seal. Shipment No. WML- - _____ Seal No. _____	_____

EXHIBIT

Signed: _____ Date: _____
(Quality Certification)

Distribution: 1. QA Certification 2. Traffic Manager

QA Certification Form
ECQ-880801-1, Rev. 4 (07/30/91)

QUALITY CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

Carrier:_____ Trailer No. :_____ Shipment No. :_____

Initials

1. Verify the RST has surveyed the trailer/vehicle and recorded results on Vehicle Radiation Monitoring Report (Form FMPC-ES&H-1596-1). _____

2. Verify the proper placards are in place, as required. _____

3. Verify the driver has performed a safety inspection of vehicle prior to leaving the FMPC: _____

headlights	_____	horn	_____
turn signals	_____	tires	_____
brake lights	_____	braking check test (optional)	_____

4. Verify the envelope with Manifest and Tally Sheets is in trailer. _____

5. Verify that a seal has been placed on the trailer doors and that the trailer number and seal number match the trailer and seal number recorded on the Bill of Lading. Report all discrepancies to the Traffic Manager. _____

Seal Number: _____

6. Verify all lot markings and weights on the Tally Sheet match the lot markings and weights on the Shipping Order. _____

Date Shipped: _____ Time Shipped: _____

I hereby certify that the above items have been verified and are correct to the best of my knowledge.

Signed:_____ Date:_____
(Quality Certification Personnel)

NOTE: UPON SATISFACTORY COMPLIANCE WITH THE ABOVE CHECKLIST CERTIFICATION PERSONNEL SHOULD SIGN THE SHIPPING ORDER AT THE SPACE MARKED "QUALITY CONTROL APPROVAL".

ECQ-881115-1, Rev. 3 (07/30/91)

EXHIBIT

6054

Quality Certification Traffic Shipment Document Checklist

	Bill/Lading(B/L)	Shipping Order(S.O.)
Ship #	_____	_____
B/L#	_____	_____
S.O.#	_____	_____
Trailer#	_____	_____
Date Prep	_____	_____
Mat.Type	_____	_____
Gross Wt.	_____	_____
Tare Wt.	_____	_____
Net Wt.	_____	_____
E.T.A.	_____	_____
Seal #	_____	_____
MCA sign	_____	_____
# of cont.	_____	_____
LSA/LQ/RQ	_____	_____

	Low Level Checklist		Packaging Information
Ship #	_____	Hazard Class	_____
B/L #	_____	Material Form	_____
S.O.#	_____	Chemical Form	_____
All Checks	_____	Labels Required	_____
3 sign	_____	Packaging Type	_____

Radiation Monitoring Sheets

	Empty	Outgoing	Survey	Cab
Trailer#	_____	_____	_____	_____
Date/Time	_____	_____	_____	_____
Survey com.	_____	_____	_____	_____

*Complete liscense # _____
*Temporary Seal # _____

Container Radiological Sheets

	Date	Time	Data Complete	Ship #
Initials	_____	_____	_____	_____
Resmears	_____	_____	_____	_____

Off Site Tie Down Contaminated Articles Sheet

Ship #	_____	Curies	_____
Trailer #	_____	Signature	_____
Seal #	_____	Data Complete	_____
Sup.Sign	_____		

*3 Tally Sheets & 1 Storage/Disposal Sheet present _____
*Driver Inst. Pack complete and numbered _____
*Weight Ticket *Ft. Axle_____* Rear Axle_____* GR. Wt._____
(Maxium weight on front or rear axle 34,000 lbs.)
*Two stick-on Radioactive Placards included for Sea/Land shipments ____

ECQ-880731-1, Rev.3 (07/31/91)

EXHIBIT

FEED MATERIALS PRODUCTION CENTER

WESTINGHOUSE MATERIALS COMPANY OF OHIO
P.O. Box 398704
Cincinnati, Ohio 45239-8704

Equipment: Sharp FO-230

FAX:

FTS: 774-8651
COMMERCIAL NO: (513)-738-8651

VERIFICATION:

FTS: 774-8649
COMMERCIAL NO: (513)-738-8649

EXHIBIT

DATE: _____ TIME: _____

TO: Stacey A. Sorg

ORGANIZATION & LOCATION: DOE/NV

FACSIMILE NO.: FTS 575-1810

VERIFICATION REQUESTED: _____ YES _____ NO

FROM: James E. Clements FMPC/WMCO FTS 774-8648

SUBJECT: CERTIFICATION STATEMENT(S) FOR L-LRW SHIPMENT(S) TO NTS

FAX MACHINE OPERATOR: _____ VERIFICATION CONFIRMED BY: _____

This message consists of _____ pages excluding cover sheets.