INEL-95/0412

Waste Description Information for Transuranically Contaminated Wastes Stored at the Idaho National Engineering Laboratory

B. D. Ravio
G. K. Becker
T. H. Smith
G. L. Anderson

Published December 1995

Idaho National Engineering Laboratory
Waste Technology Planning and Projects
Lockheed Idaho Technologies Company
Idaho Falls Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-94ID13223

ABSTRACT

The Department of Energy is in the process of procuring private sector treatment services for transuranic-contaminated and mixed waste stored at the Idaho National Engineering Laboratory (INEL). This document has been prepared to provide current waste descriptions for preliminary design and estimation purposes. It provides summary and detailed description information for the transuranically-contaminated wastes stored at the INEL in terms of the physical, radiological, and chemical parameters defining the wastes. Waste description information is provided in the form of summary tables and detailed waste profile data in Appendices A and B. Various summary and detailed information tables on waste identification codes, waste materials description, waste storage configuration, waste containers, radionuclide contaminants, EPA-regulated hazardous contaminants, and physical and chemical waste compositions are provided.

CONTENTS

ABSTRACT iii

ACRONYMS xiii

1. INTRODUCTION 1-1

1.1 Background 1-2

1.2 Definitions 1-6

1.3 References 1-7

2. WASTE SUMMARY INFORMATION 2-1

3. WASTE MATRIX PHYSICAL AND CHEMICAL COMPOSITION CHARACTERIZATION 3-1

3.1 References 3-19

4. WASTE RADIOLOGICAL CHARACTERIZATION 4-1

4.1 Radiological Information Derived Primarily from Rocky Flats Plant Waste via the INEL Transuranic Waste Database Analysis 4-1

4.1.1 Alpha Data 4-13
4.1.2 Electron Data 4-27
4.1.3 Photon Data 4-27
4.1.4 Neutron Data 4-47

4.2 Information Derived via RWMIS Analysis 4-53

4.3 Refinement of Nonactinide Nuclide Inventory Using Information from Other Sources 4-61

4.3.1 Tritium 4-61
4.3.2 Nonactinides in Radiation Sources 4-63
4.3.3 Presence of Other Radionuclides 4-65

4.4 References 4-67

5. WASTE HAZARDOUS CHARACTERIZATION 5-1

6. INEL WASTE PROFILE SHEET FORMAT 6-1

6.1 Identification and Description 6-1

6.2 Storage 6-9

6.3 Waste Matrix Component Data 6-10

6.4 Radionuclide Contaminant and Alpha Activity Concentration Data 6-10

6.5 EPA Hazardous Contaminant Data 6-14

7. INFORMATION FOR USE WHEN NO OTHER WASTE DATA OR INFORMATION ARE AVAILABLE 7-1

8. WASTE PRESENT STORAGE LOCATION AND RETRIEVAL INFORMATION 8-1

8.1 SITE DESCRIPTION 8-1

8.1.1 INEL RWMC Site Background 8-1
8.1.2 Existing Alpha-contaminated Waste Capability 8-1
8.1.3 Sources of Alpha-contaminated Waste 8-1
8.1.4 Subsurface Disposal Area 8-4
8.1.5 Transuranic Storage Area 8-4
8.1.6 Support Facilities 8-4
8.1.7 Buildings 8-4
8.1.8 Railroad Spur 8-7
8.1.9 Stored Waste Examination Pilot Plant (SWEPP) (NDE/NDA Facility) 8-8
8.1.10 Trupact Loading Station (TLS) 8-8

8.2 Current Storage and Waste Characterization Information 8-8

9. REFERENCES 9-1

Appendix A—Detailed Information for Mixed and Non-mixed Alpha Low-Level Waste A-1

Appendix B—Detailed Information for Mixed and Non-mixed Transuranic Waste B-1

FIGURES

1-1. TSA Waste in Retrievable Storage 1-3

1-2. Typical TSA waste in boxes 1-4

1-3. Typical TSA waste in drums 1-4

2-1. Waste types at the INEL 2-2

2-2a. Generators of stored ALLW 2-3

2-2b. Generators of stored TRUW 2-3

2-3. Physical form of TSA waste 2-4

2-4a. Combustibility of ALLW 2-5

2-4b. Combustibility of TRUW 2-5

2-5. Waste matrix distribution of stored ALLW and TRUW 2-6

2-6. Known and suspect RH waste 2-8

2-7. Primary radionuclide activity distribution for TSA waste 2-9

2-8a. RCRA categories of mixed ALLW 2-10

2-8b. RCRA categories of mixed TRUW 2-10

3-1. Distribution of waste matrix by component 3-2

4-1. TSA Stored Waste Distribution by Alpha Activity Concentration Interval Number 4-24

4-2. TSA Stored Waste Distribution by Alpha Activity Concentration 4-25

4-3. Gamma spectrum of Am-241 parent at 15 years post purification 4-30

4-4. Gamma spectrum of Am-243 parent at 15 years post purification 4-31

4-5. Gamma spectrum of Np-237 parent at 15 years post purification 4-32

4-6. Gamma spectrum of Pu-236 parent at 15 years post purification 4-33

4-7. Gamma spectrum of Pu-238 parent at 15 years post purification 4-34

4-8. Gamma spectrum of Pu-239 parent at 15 years post purification 4-35

4-9. Gamma spectrum of Pu-240 parent at 15 years post purification 4-36

4-10. Gamma spectrum of Pu-241 parent at 15 years post purification 4-37

4-11. Gamma spectrum of Pu-242 parent at 15 years post purification 4-38

4-12. Gamma spectrum of Ra-226 parent at 15 years post purification 4-39

4-13. Gamma spectrum of Th-230 parent at 15 years post purification 4-40

4-14. Gamma spectrum of Th-232 parent at 15 years post purification 4-41

4-15. Gamma spectrum of U-233 parent at 15 years post purification 4-42

4-16. Gamma spectrum of U-235 parent at 15 years post purification 4-43

4-17. Gamma spectrum of U-238 parent at 15 years post purification 4-44

4-18. Gamma spectrum of heat source plutonium at 15 years post purification 4-45

4-19. Gamma spectrum of weapons grade plutonium at 15 years post purification 4-46

5-1. Distribution of identified RCRA contaminants 5-4

8-1. Map of the Transuranic Storage Area (TSA) of the RWMC at the INEL 8-2

8-2. Aerial Photo of RWMC. 8-3

8-3. Transuranic storage area at the RWMC 8-5

8-4. TSA Retrieval enclosure 8-6

8-5. Composite layout of TSA-1 extracted from Drawing Number 1375-BFG-705-2 8-9

8-6. Composite layout of TSA-2 extracted from Drawing Number 0980705-220 8-10

8-7. Composite layout of TSA-R extracted from Drawing Number 1570-RWMC-112-1 and subsequently updated. 8-11

8-8. TSA Waste in Retrievable Storage. 8-12

8-9. Typical TSA waste in boxes. 8-13

8-10. Typical TSA waste in drums 8-13

TABLES

2-1. Waste types stored at the INEL 2-2

2-2. Waste volume and mass by generator 2-3

2-3. Waste volume by physical form 2-4

2-4. Combustibility of waste 2-5

2-5. Distribution of primary waste matrix components 2-7

2-6. Waste suspect or known to contain remote-handled material 2-8

2-7. Inventory of primary radionuclides in TSA stored waste 2-9

2-8. RCRA categories of stored mixed ALLW and TRUW 2-10

2-9. Summary of special-case waste 2-11

2-10. Waste summary by identifier category 2-12

3-1. INEL alpha contaminated waste matrix composition summary by component 3-3

3-2. Chemical composition of waste constituents of the waste stored in the TSA 3-5

3-3. Chemical composition of the inert fraction of waste constituents stored in the TSA (expressed as a fraction of the inert chemicals) 3-7

3-4. Chemical composition of the inert fraction of waste constituents stored in the TSA (expressed as a fraction of the total constituent chemicals) 3-9

3-5. Particle size distribution and mean density of RWMC soil 3-11

3-6. Cation exchange capacity of RWMC soil 3-12

3-7. Mineral content of RWMC soil 3-13

3-8. Chemical composition of RWMC soil 3-14

3-9. Particle size distribution and mean density of Rocky Flats Plant soil 3-15

3-10. Cation exchange capacity of RFP soil 3-16

3-11. Mineral content of Rocky Flats Plant soil 3-17

3-12. Chemical composition of Rocky Flats Plant soil 3-18

4-1. Radionuclide summary for INEL TSA stored waste 4-3

4-2. Known remote handled waste in the ILTSF 4-9

4-3. TSA alpha low-level waste suspect as having some portion being remote handled 4-9

4-4. TSA transuranic waste suspect as having some portion being remote handled 4-10

4-5. Radionuclides and plutonium compounds for which data are reported 4-12

4-6. Nominal isotopic composition of plutonium compounds 4-12

4-7. Alpha activity due to one gram of TRU parent source material at 15 years post purification 4-14

4-8. Alpha activity due to one gram of non-TRU parent source material at 15 years post purification 4-14

4-9. Plutonium mixture summary for weapons grade plutonium (WG Pu/Pu-52) waste 4-16

4-10. Plutonium mixture summary for heat source plutonium (HS Pu/Pu-83) waste 4-18

4-11. Alpha activity at 15 year due to Pu-236 isotope 4-20

4-12. Alpha activity at 15 year due to Pu-238 isotope 4-20

4-13. Alpha activity at 15 year due to Pu-239 isotope 4-21

4-14. Alpha activity at 15 year due to Pu-240 isotope 4-21

4-15. Alpha activity at 15 year due to Pu-241 isotope 4-21

4-16. Alpha activity at 15 year due to Pu-242 isotope 4-22

4-17. Alpha activity at 15 year due to Am-241 isotope 4-22

4-18. TSA stored waste distribution by alpha concentration 4-23

4-19. TRU alpha activity concentration intervals 4-26

4-20. Total electron yield per gram parent material at 15 years post purification 4-28

4-21. Tabular data for gamma spectrum of Am-241 parent at 15 years post purification 4-30

4-22. Tabular data for gamma spectrum of Am-243 parent at 15 years post purification 4-31

4-23. Tabular data for gamma spectrum of Np-237 parent at 15 years post purification 4-32

4-24. Tabular data for gamma spectrum of Pu-236 parent at 15 years post purification 4-33

4-25. Tabular data for gamma spectrum of Pu-238 parent at 15 years post purification 4-34

4-26. Tabular data for gamma spectrum of Pu-239 parent at 15 years post purification 4-35

4-27. Tabular data for gamma spectrum of Pu-240 parent at 15 years post purification 4-36

4-28. Tabular data for gamma spectrum of Pu-241 parent at 15 years post purification 4-37

4-29. Tabular data for gamma spectrum of Pu-242 parent at 15 years post purification 4-38

4-30. Tabular data for gamma spectrum of Ra-226 parent at 15 years post purification 4-39

4-31. Tabular data for gamma spectrum of Th-230 parent at 15 years post purification 4-40

4-32. Tabular data for gamma spectrum of Th-232 parent at 15 years post purification 4-41

4-33. Tabular data for gamma spectrum of U-233 parent at 15 years post purification 4-42

4-34. Tabular data for gamma spectrum of U-235 parent at 15 years post purification 4-42

4-35. Tabular data for gamma spectrum of U-238 parent at 15 years post purification 4-44

4-36. Tabular data for gamma spectrum of heat source plutonium at 15 years post purification 4-45

4-37. Tabular data for gamma spectrum of weapons grade plutonium at 15 years post purification 4-46

4-38. Neutron yields for plutonium isotopes and ^{241}Am 4-49

4-39. Representative neutron yields per gram Pu 4-49

4-40. Neutron yields for uranium isotopes 4-50

4-41. Neutron yields for other nuclides 4-50

4-42. Average retrievably-stored waste neutron emission rates 4-52

4-43. Nuclide summary by shipment, volume, and decayed activity 4-54

4-44. Contact handled ALLW non-actinide activity 4-57

4-45. Contact handled TRUW non-actinide activity 4-58

4-46. Remote handled ALLW non-actinide activity 4-59

4-47. Remote handled TRUW non-actinide activity 4-60

4-48. Refined activity inventory for select nuclides 4-62

4-49. Nonactinides plus Ra-226 in radiation sources received from the Rocky Flats Plant 4-64

4-50. Estimated activities of C-14, Tc-99, and I-129 in stored waste 4-66

5-1. Historical TSA-stored waste hazardous information 5-2

5-2. Distribution of hazardous contaminants 5-3

5-3. Hazardous contaminants summary for TSA stored waste 5-5

6-1. Summary of waste identifier code and name 6-2

6-2. TRU alpha activity concentration intervals 6-12

8-1. Descriptions of waste containers expected to be retrieved from storage 8-14

8-2. Transuranic Storage Area (TSA) estimated waste inventory 8-16

8-3. TSA waste volume by storage location and content code 8-17

8-4. Cell location by container type, number, and volume 8-30

8-5. TSA disposal year by generator and container type 8-33

ACRONYMS

ACL	Analytical Chemical Laboratories
ALLMW	alpha low-level mixed waste
ALLW	alpha low-level waste; also referred to as a-LLW
ANL	Argonne National Laboratory
ANL-W	Argonne National Laboratory West
CH	contact-handled
CWS	Chemical Warfare Service
D&D	decontamination and decommissioning
DDW	decontamination and decommissioning waste
DOE	United States Department of Energy
EDF	Engineering Design File
EDTA	ethylenediaminetetraacetic acid
ENSDF	Evaluated Nuclear Structure Data File
EPA	United States Environmental Protection Agency
EWR	early waste retrieval
FFCA	Federal Facility Compliance Act
FRP	fiberglass-reinforced polyester
HEDL	Hanford Engineering and Development Laboratory
HEPA	high-efficiency particulate air
HLW	high-level waste
HS Pu	heat-source plutonium
ICPP	Idaho Chemical Processing Plant
ILTSF	Intermediate-Level Transuranic Storage Facility

IMWI	Idaho Mixed Waste Information (database)
IMWIR	Interim Mixed Waste Inventory Report (FFCA)
INEL	Idaho National Engineering Laboratory
LLMW	low-level mixed waste
LLW	low-level waste
LSA	low specific activity <100 nCi/g
MIBK	methyl-isobutyl ketone
MWIR	Mixed Waste Inventory Report (FFCA)
NDA	nondestructive assay
NWCF	New Waste Calcining Facility
PAN	passive-active neutron (assay system)
PCBs	polychlorinated biphenyls
PE	polyethylene
PTFE	Teflon
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
RFP	Rocky Flats Plant
RGW	research-generated waste
RH	remote-handled
Rn	radon
RPCs	residue process containers
SWBs	standard waste boxes
SWEPP	Stored Waste Examination Pilot Plant

TRAMPAC	Transuranic Package Transporter-II authorized methods for payload control
TRU	transuranium radionuclide
TRUMW	transuranic mixed waste
TRUW	transuranic waste
TSA	Transuranic Storage Area
TWDB	Transuranic Waste Database
U.S. EPA	United States Environmental Protection Agency
WAC	waste acceptance criteria
WG Pu	weapons-grade plutonium
WIPP	Waste Isolation Pilot Plant
WIPP WAC	Waste Isolation Pilot Plant Waste Acceptance Criteria

Waste Description Information for Transuranically-Contaminated Wastes Stored at the Idaho National Engineering Laboratory

1. INTRODUCTION

The Department of Energy is in the process of procuring private sector treatment services for transuranically-contaminated and mixed waste stored at the Idaho National Engineering Laboratory (INEL). This document was originally prepared in support of this DOE procurement strategy. This document provides summary and detailed description information for the transuranically-contaminated wastes stored at the INEL in terms of the physical, radiological, and chemical parameters defining the wastes and believed relevant for preparing treatment services and facilities proposals. This document updates and supplements the information previously provided in *Radiological, Physical, and Chemical Characterization of Low-Level Alpha-Contaminated Wastes Stored at the Idaho National Engineering Laboratory for Use in Conducting Feasibility Studies for Treatment Services*[1-1] and *Radiological, Physical, and Chemical Characterization of Transuranic Wastes Stored at the Idaho National Engineering Laboratory for Use in Conducting Feasibility Studies for Treatment Services*[1-2] and used for earlier private sector treatment service feasibility studies.[1-3]

This document provides current waste stream characterization information on the mixed and non-mixed alpha-contaminated low-level and transuranic waste stored at the INEL.

For the purposes of this document, the term *alpha low-level waste* refers to low-level waste containing, at the time of assay, less than or equal to 100 nCi/g of alpha-emitting transuranium radionuclides with half-lives greater than 20 years per gram of waste. The term *transuranic waste* refers to waste containing, at the time of assay, greater than 100 nCi/g of alpha-emitting transuranium radionuclides with half-lives greater than 20 years per gram of waste. The term *hazardous waste* refers to waste defined as hazardous according to the EPA.[1-4] Mixed wastes contain both radioactive and hazardous materials. Definitions for these and other selected terms used throughout this document are provided in Section 1.2

This document provides various summaries and rollups, as well as more detailed information. It is organized into nine sections. Following this introductory Section 1, Section 2 of this volume contains overall summary information describing the waste. Sections 3, 4, and 5 contain more detailed summary information for waste matrix, radionuclide, and hazardous characterization. Sections 6 and 7 contain descriptive format information related to the detailed waste information in Appendices A and B. Section 8 contains background and summary information on the current waste storage locations and relationships to waste characterization information. Section 9 lists references. Appendix A contains detailed information on the alpha-contaminated mixed and non-mixed low-level wastes. Appendix B contains detailed information on the alpha-contaminated mixed and non-mixed transuranic wastes. The detailed data in Appendices A and B are also available in electronic database format.

1.1 Background

From 1952 to 1970, wastes consisting of transuranically-contaminated solid wastes and low-level wastes were buried in a series of pits and trenches located within the Radioactive Waste Management Complex (RWMC) at the INEL. In 1970, burial of the transuranic-contaminated waste was discontinued and temporary above-ground storage initiated. The buried waste is located in the area now known as the Subsurface Disposal Area (SDA), and the storage location for the above-ground waste is at the Transuranic Storage Area (TSA) within the RWMC. The majority of the transuranic-contaminated waste is also believed contaminated with current EPA-regulated hazardous contaminants, and is therefore mixed waste under current regulatory definitions. This document provides summary and detailed characterization information for the above-ground transuranic stored (TSA) waste. Information concerning the buried waste is not included.

The wastes stored at the TSA are DOE laboratory and processing wastes primarily from Rocky Flats operations, but also include wastes from the INEL and various other DOE facilities. The wastes are typically heterogeneous mixtures of various solid materials including paper, cloth, plastic, rubber, glass, graphite, bricks, concrete, metals, nitrate salts, process sludges, miscellaneous components, and some absorbed liquids. Various RCRA[1-4] hazardous organics and metals, and alpha-emitting transuranic radionuclides (primary) are distributed throughout. Some TSCA[1-5] PCB-contaminated materials are present. These wastes are stored in drums, boxes, and bins. Most are capable of being contact-handled (radiation levels < 200 mrem/hr), but some containers or contents may require remote handling due to high radiation levels.

Transuranic wastes stored within the TSA were generated by operations conducted for the U.S. Atomic Energy Commission (AEC), now the U.S. Department of Energy (DOE), and its successor agencies. The following facilities generated the majority of the TRU wastes placed in storage at the TSA: Rocky Flats Plant, Golden, Colorado; Mound Laboratory, Miamisburg, Ohio; Battelle Columbus Laboratories, Columbus, Ohio; Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania; and Argonne National Laboratory-East, Argonne, Illinois. Small volumes of alpha-contaminated waste have also been generated by INEL operations. In addition, the INEL Initial Drum Retrieval (IDR) and Early Waste Retrieval (EWR) projects for characterizing buried waste contributed to waste placed in storage at the TSA.

Figure 1-1 shows placement of waste on a retrievable storage pad prior to bermed coverage. Figures 1-2 and 1-3 show representations of typical wastes packed in boxes and drums.

Data describing wastes stored at the INEL and other DOE facilities have been reported in several documents and databases. These have often been developed in response to regulatory reporting requirements such as those under the Federal Facility Compliance Act[1-6] and the Land Disposal Restriction Case-by-Case Extension requirements.[1-7] While informative in providing general physical, descriptive, and storage data, these information systems and documents generally lack sufficiently detailed information on the waste matrix materials chemical composition, radiological properties of the wastes, and quantification of hazardous constituents to enable treatment system and facility design. An objective of this waste description document is to provide information at a sufficiently quantitative level to be useable for

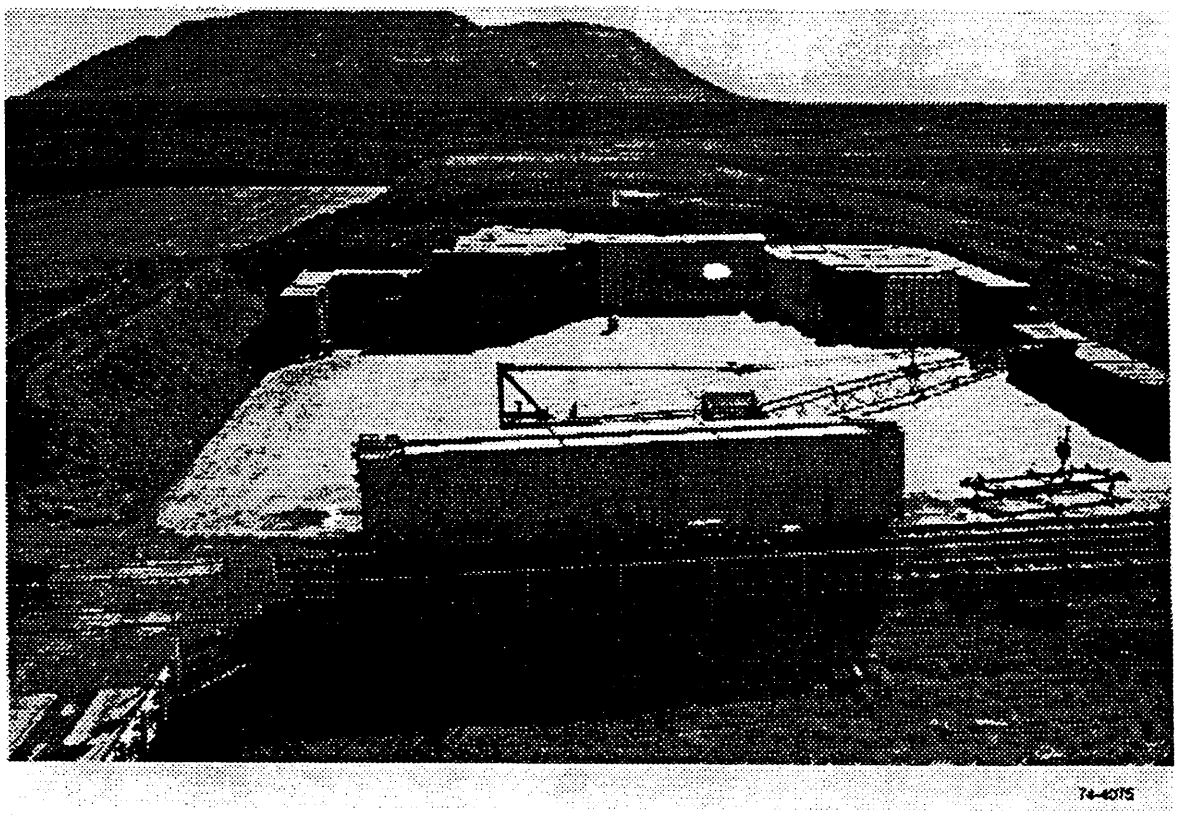


Figure 1-1. TSA Waste in Retrievable Storage.

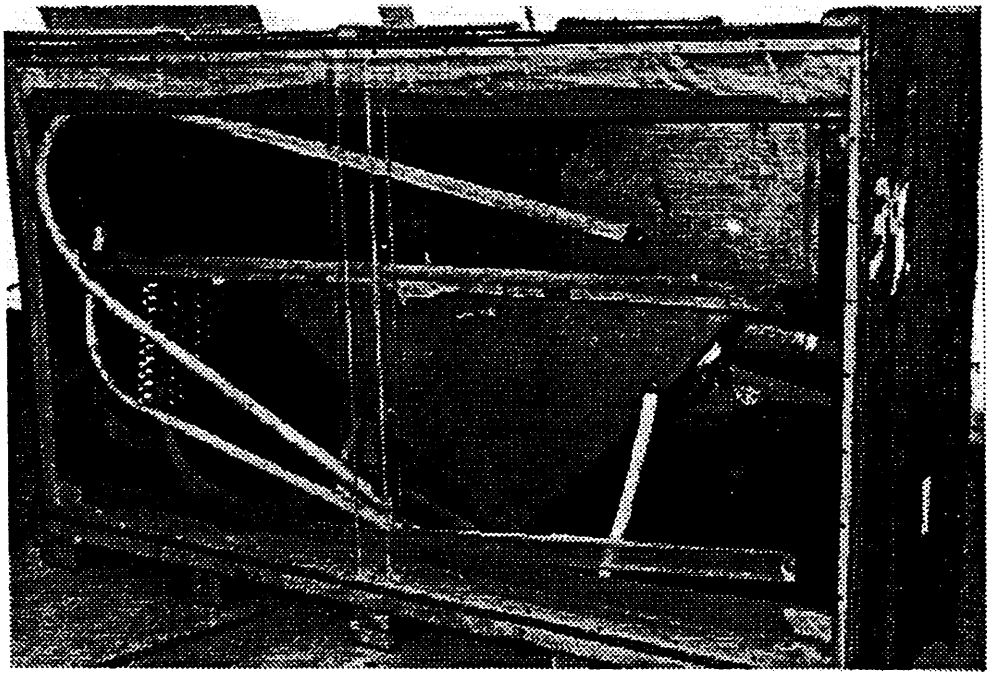


Figure 1-2. Typical TSA waste in boxes.

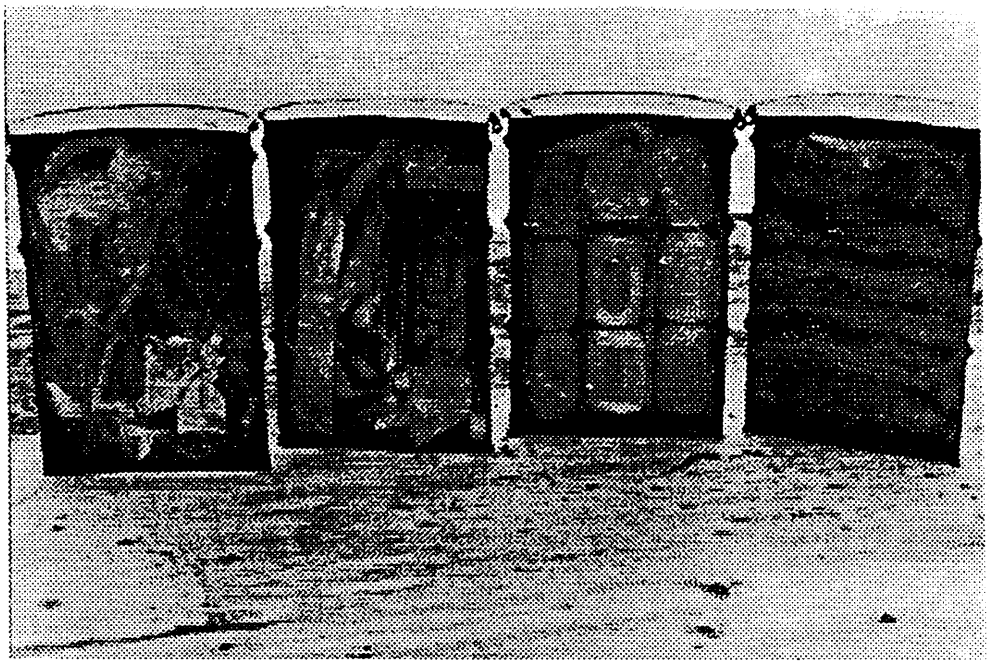


Figure 1-3. Typical TSA waste in drums.

developing preliminary designs and proposals for safe, efficient, and economical treatment of the INEL stored wastes. For this reason, information contained in this report provides baseline identification, storage, waste matrix composition, radiological, and hazardous properties of these wastes at a more detailed level.

The waste streams are defined at the content code level with waste parameter information derived from DOE waste management tracking databases, generator process knowledge, internal documents, and actual nondestructive and destructive sampling analysis of subsets of the wastes.

The identification information includes waste stream identifier codes, names, content codes, and descriptions. The storage information includes container types and quantity, waste volume, and mass. The waste matrix information includes waste mixture component materials masses, volumes, and estimates on material chemical compositions. The radiological constituents information includes estimates on alpha, beta, gamma, and neutron activity. The hazardous constituents information includes EPA-regulated RCRA and TSCA hazardous contaminants identification and estimated quantities.

The waste description information presented in this report is based upon current compilations of information available in the INEL waste management databases based primarily upon generators' shipping records, and supplemented by engineering evaluations of these records, other records, generator process knowledge, and nondestructive and destructive sampling analyses of subsets of the containerized wastes. The waste types in terms of locations, containers, bulk matrix materials, and total volumes and masses are believed to be reasonably well known from current information. The distributions of materials within and among containers is, however, much more variable and uncertain. The potential for unreported items exists.

The total amounts (mass/activity) of radionuclides and hazardous constituents are small in comparison to the bulk matrix waste materials. The presence and defined amounts of radionuclides and hazardous constituents have been conservatively estimated from available data using best engineering judgment. It should be clear, however, that there is much greater potential for error or uncertainty in defining the amounts of small-quantity constituents.

The information in this document represents the best available description of these wastes at this time for treatment system design and review purposes. It should be clearly recognized, however, that there are many sources of uncertainty and variability present, both from the heterogeneous nature of the wastes and from gaps in the original generator's records, which provide the majority of the information concerning the wastes. These uncertainties and variabilities must be accommodated within the treatment process system/facility design.

It is expected that additional information characterizing the wastes for treatment processing and licensing may be needed and can be obtained. However, the type and level of detail necessary will be dependent in large measure on the treatment system capability and can be best identified within the treatment system design process.

It is also expected that ongoing DOE efforts to improve the information databases for defining the existing waste description will continue, and updated/refined information will be made available as appropriate.

1.2 Definitions

For the purposes of this document, the following definitions apply and are consistent with DOE Order 5820.2A, Radioactive Waste Management.[1-8]

Alpha Low-Level Mixed Waste (ALLMW). Alpha low-level waste also containing hazardous constituents as defined by the Resource Conservation and Recovery Act.

Alpha Low-Level Waste (ALLW). Low-level waste containing, at the time of assay, less than or equal to 100 nCi/g of alpha-emitting transuranium radionuclides with half-lives greater than 20 years per gram of waste. The acronym a-LLW is also used to designate alpha low-level waste.

Contact-Handled Transuranic Waste (CH). Packaged transuranic waste whose external surface dose rate does not exceed 200 mrem per hour.

Hazardous Waste. Those wastes that are designated hazardous by EPA regulations in accordance with 40 CFR 261.[1-9]

High-Level Waste (HLW). The highly-radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing any solid waste derived from the liquid that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation. This definition is derived from 10 CFR 60.2[1-10] which states, "High-level radioactive waste or HLW means: (1) irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted."

Low-Level Mixed Waste (LLMW). Low-level waste also containing hazardous constituents as defined by the Resource Conservation and Recovery Act.

Low-Level Waste (LLW). Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent fuel or 11e(2) byproduct material as defined by DOE Order 5820.2A. Test specimens of fissionable material irradiated only for research and development, and not for the production of power or plutonium, may be classified as low-level waste provided the concentration of transuranic is less than 100 nCi/g of waste.

Mixed Waste. Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.

Package. The packaging, together with its radioactive contents, as presented for transport. (10 CFR 71.4[1-10]/49 CFR 173.403[1-11]).

Packaging. The assembly of components necessary to ensure compliance with packaging requirements of 49 CFR Subpart 1.[1-11] It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shock. The conveyance, tie-down system, and auxiliary equipment may sometimes be designated as part of the packaging. (10 CFR 71.4[1-10]/49 CFR 173.403[1-11]).

Radioactive Waste. Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, and of negligible economic value considering costs of recovery.

Remote-Handled Transuranic Waste (RH). Packaged transuranic waste whose external surface dose rate exceeds 200 mrem per hour. Test specimens of fissionable material irradiated only for research and development purposes, and not for the production of power or plutonium, may be classified as remote-handled transuranic waste.

Transuranic Mixed Waste (TRUMW). Transuranic waste also containing hazardous constituents as defined by the Resource Conservation and Recovery Act.

Transuranic Waste (TRUW). Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than twenty years and concentrations greater than 100 nCi/g of waste at the time of assay. The terms transuranic-contaminated and alpha-contaminated are used interchangeably in this report

Transuranium Radionuclide (TRU). Any radionuclide having an atomic number greater than ninety-two.

Waste Container. Any receptacle (i.e., drums, boxes, bins) used to contain radioactive waste.

1.3 References

1-1. M. L. Apel, et al., *Radiological, Physical, and Chemical Characterization of Low Level Alpha Contaminated Wastes Stored at the Idaho National Engineering Laboratory*, EGG-RWMC-11189, Rev 0, March 1994.

1-2. M. L. Apel, et al., *Radiological, Physical, and Chemical Characterization of Transuranic Wastes Stored at the Idaho National Engineering Laboratory*, EGG-RWMC-11190, Rev 0, March 1994.

1-3. *Statement of Work for a Feasibility Study on Treatment Services for Alpha-Contaminated Mixed Low Level Wastes*, December 15, 1993, as included in RFP DE-RP07-94ID13278, *Private Sector Waste Treatment Facility Feasibility Study*, dated December 20, 1993.

1-4. Resource Conservation and Recovery Act of 1976, as amended, (Public Law 94-580).

1-5. Toxic Substance Control Act of 1976, as amended, (Public Law 94-469).

1-6. Federal Facility Compliance Act of 1992, as amended, (Public Law 102-386).

1-7. U.S. Department of Energy, *Land Disposal Restriction Case-by-Case Extension Application for Radioactive Mixed Wastes*, as submitted to the U.S. Environmental Protection Agency, October, 1991.

1-8. U.S. Department of Energy Order 5820.2A, "Radioactive Waste Management," Office of Defense Waste and Transportation Management, U.S. Department of Energy, Washington, D.C., September 26, 1988

1-9. Code of Federal Regulations, Title 40, "Protection of the Environment," Office of the Federal Register National Archives and Records Administration, July 1, 1991.

1-10. Code of Federal Regulations, Title 10, "Energy," Office of the Federal Register National Archives and Records Administration, July 1, 1993.

1-11. Code of Federal Regulations, Title 49, "Transportation," Office of the Federal Register National Archives and Records Administration, October 1, 1992.

2. WASTE SUMMARY INFORMATION

This section presents various high-level summary description tables and figures for the INEL stored transuranically-contaminated wastes. The tables and figures show the relative volume or mass distributions of the total waste inventory for selected top-level summary parameters of interest such as waste type, waste generator, physical form, combustibility, primary material components, RH versus CH, primary radionuclides, container types, etc. The waste types include mixed and non-mixed alpha low-level and mixed and non-mixed transuranic waste. The total waste inventory volume is estimated to be approximately 65,000 cubic meters. The mass corresponding to this volume is estimated to be approximately 3.17 E+07 kilograms. Since all shipment records are volume-based, the volume summaries are believed to be less uncertain than the relative mass summaries.

Figure 2-1 and Table 2-1 show the waste types and estimated volume stored at the INEL.

Figure 2-2a, Figure 2-2b, and Table 2-2 show the estimated waste volume by the generators of the waste.

Figure 2-3 and Table 2-3 show the waste type by physical form (volume based).

Figure 2-4a and Figure 2-4b and Table 2-4 show the estimated combustibility of the waste.

Figure 2-5 and Table 2-5 show the estimated distribution of primary waste matrix components (mass basis).

Figure 2-6 and Table 2-6 show volume estimates of waste suspect or known to contain remote-handled material.

Figure 2-7 and Table 2-7 show the estimated distribution and activity for primary radionuclides (mass basis).

Figure 2-8a, Figure 2-8b and Table 2-8 show the estimated distribution of RCRA categories for the mixed ALLW and mixed TRUW (volume basis).

Table 2-9 presents an estimation of special-case waste.

Table 2-10 presents a summary of container type, volume and mass by waste type and waste stream identifier code.

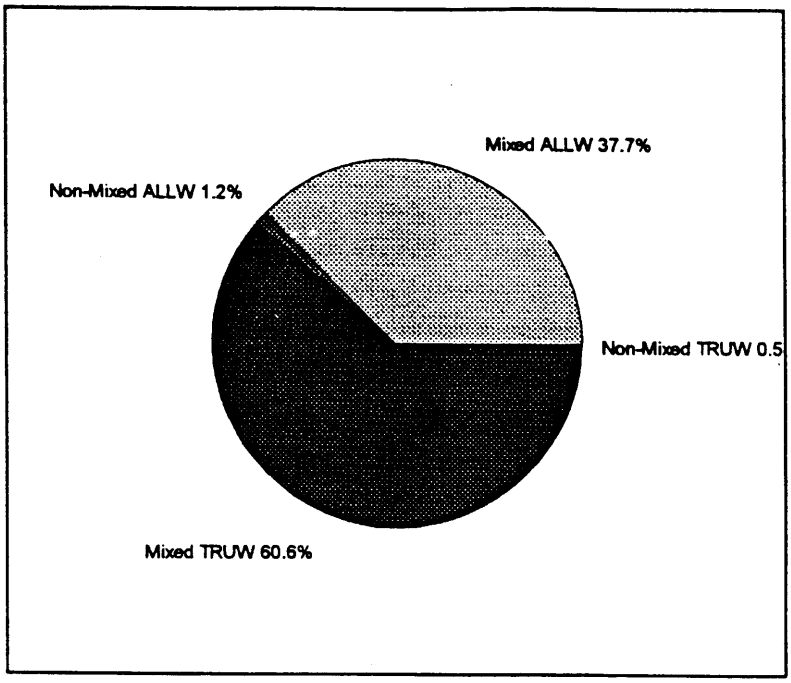


Figure 2-1. Waste types at the INEL.

Table 2-1. Waste types stored at the INEL.

Waste type	Volume (m^3)	Number of identified waste streams[a]
Mixed ALLW[b]	24,635	84
Non-mixed ALLW	786	12
Subtotal	**25,421**	**96**
Mixed TRUW	39,171	115
Non-mixed TRUW	325	39
Subtotal	**39,496**	**154**
Totals	**64,917**	**250**

a. A listing of waste stream identification codes and names in given in Section 6.1.

b. The ALLW waste type was derived from the reclassification of TRU waste from >10 nCi/g to >100 nCi/g transuranium radionuclides.

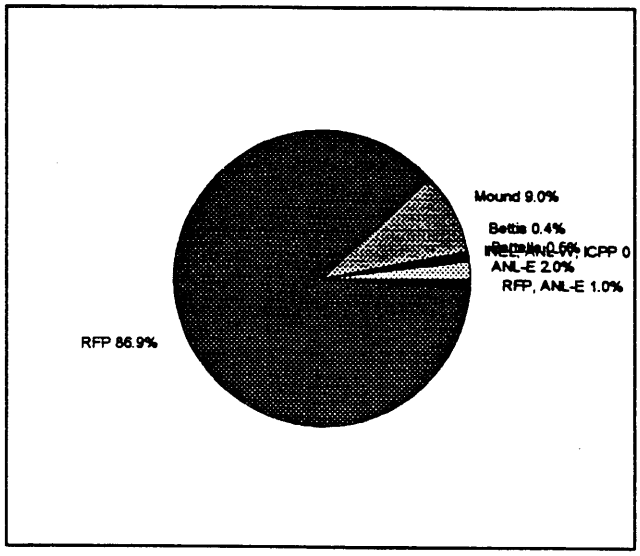


Figure 2-2a. Generators of stored ALLW

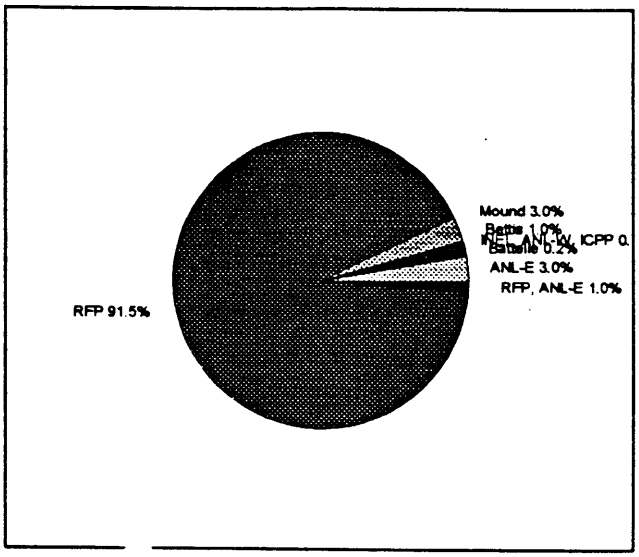


Figure2-2b. Generators of stored TRUW.

Table 2-2. Waste volume and mass by generator.

Generator Site		Volume (m^3)	%
Alpha Low Level Categorized Waste			
ANL-E		471.0	2.0
Battelle		116.0	0.5
Bettis		97.0	0.4
INEL, ANL-W, ICPP		51.0	0.2
Mound		2,231.0	9.0
RFP		22,170.0	87.0
RFP, ANL-E		285.0	1.0
	Subtotal	25,421.0	
Transuranic Categorized Waste			
Unknown		13.0	<0.1
ANL-E		1,107.0	3.0
Battelle		75.0	0.2
Bettis		322.0	1.0
INEL, ANL-W, NRF, ICPP		129.0	0.3
Mound		1,023.0	3.0
RFP		36,246.0	92.0
RFP, ANL-E		579.0	1.0
	Subtotal	39,497.0	
	Total	64,916	

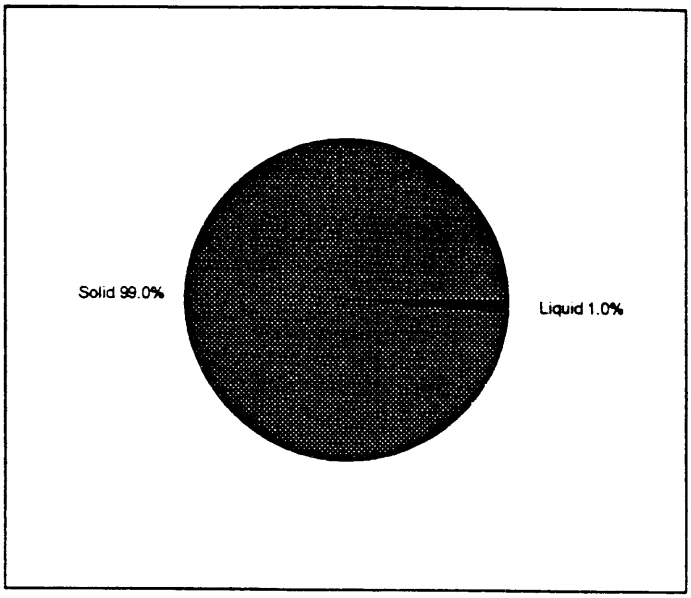


Figure 2-3. Physical form of TSA waste.

Table 2-3. Waste volume by physical form.

	Physical form		Volume (m^3)
	Liquid	Solid	
Mixed Alpha LLW	< 1%	>99%	
Non-mixed Alpha LLW	< 1%	>99%	
Mixed TRUW	< 1%	>99%	
Non-mixed TRUW	< 1%	>99%	
		Total	**64,917**

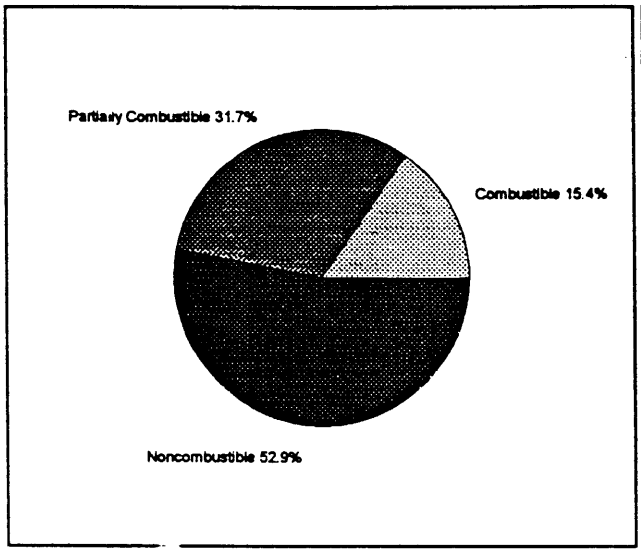


Figure 2-4a. Combustibility of ALLW

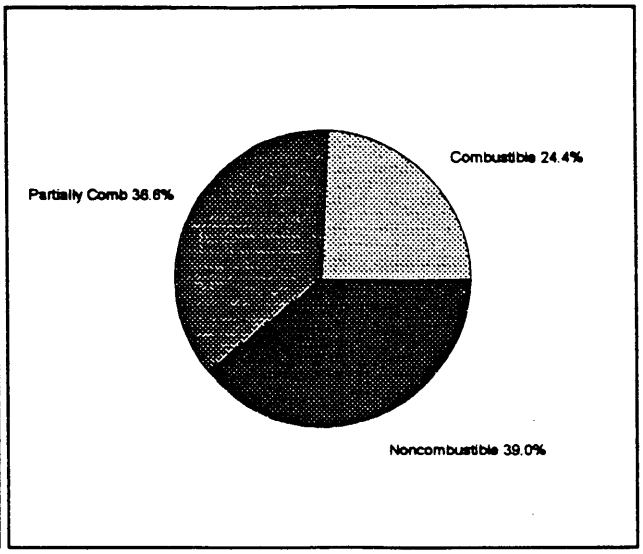


Figure 2-4b. Combustibility of TRUW

Table 2-4. Combustibility of waste.

Combustibility[a]	Volume % ALLW	Volume % TRUW
Combustible	15.4	24.4
Partially combustible	31.7	36.6
Noncombustible	52.8	39.0
Total Volume	**25,421 m3**	**39,496 m3**

a. Waste combustibility varies significantly between waste types. The basis for definition is: combustible waste contains greater than 90% combustible materials; partially combustible waste contains between 10 and 90% combustible materials; and noncombustible waste contains less than 10% combustible materials.

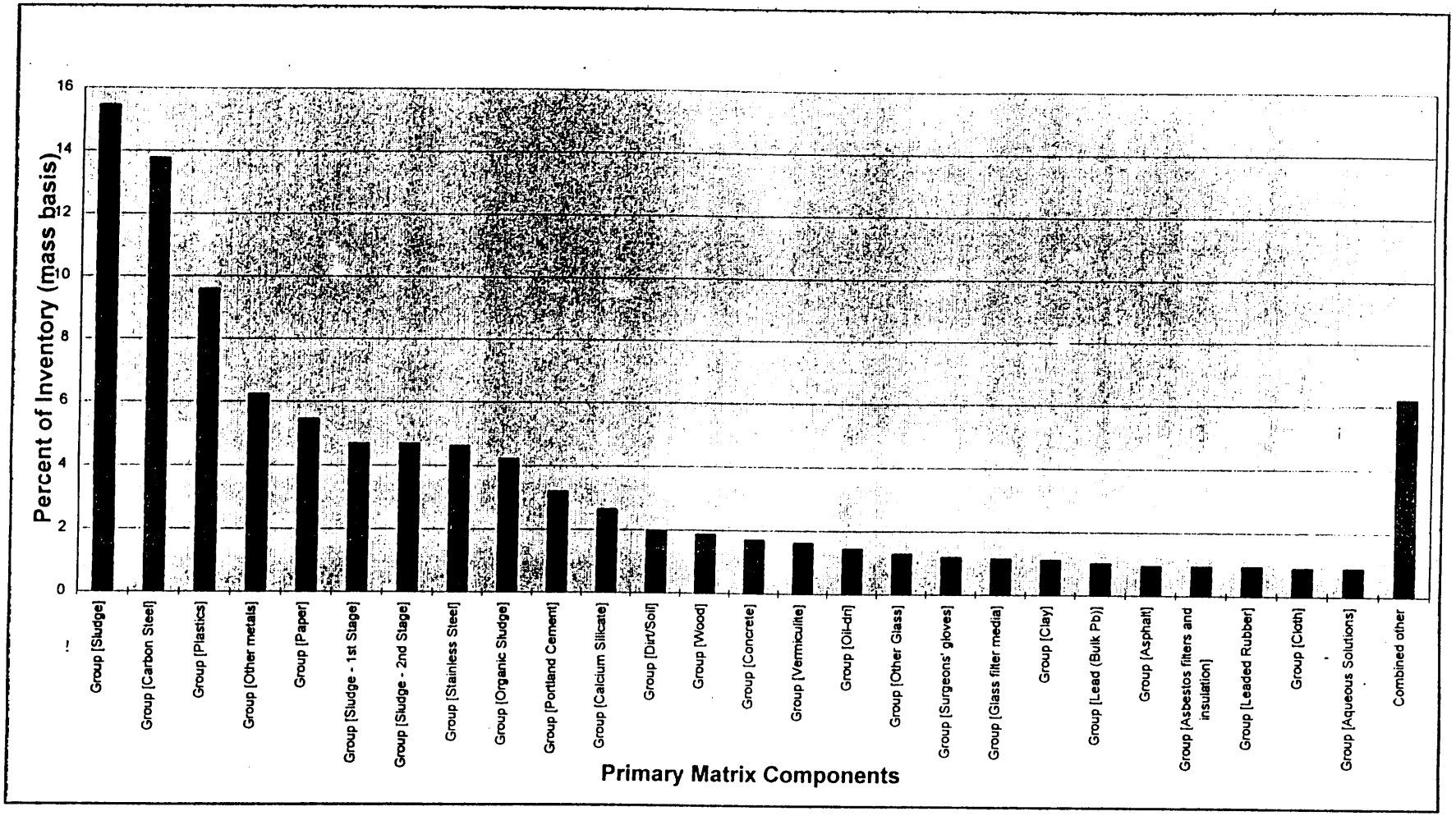


Figure 2-5. Waste matrix distribution of stored ALLW and TRUW.

Table 2-5. Distribution of primary waste matrix components.

Component		Percent of Inventory (mass basis)[a]
Group [Sludge]		15.5
Group [Carbon Steel]		13.8
Group [Plastics]		9.6
Group [Other metals]		6.2
Group [Paper]		5.5
Group [Sludge - 1st Stage]		4.7
Group [Sludge - 2nd Stage]		4.7
Group [Stainless Steel]		4.6
Group [Organic Sludge]		4.2
Group [Portland Cement]		3.2
Group [Calcium Silicate]		2.6
Group [Dirt/Soil]		2.0
Group [Wood]		1.9
Group [Concrete]		1.7
Group [Vermiculite]		1.6
Group [Oil-dri]		1.5
Group [Other Glass]		1.3
Group [Surgeons' gloves]		1.2
Group [Glass filter media]		1.2
Group [Clay]		1.1
Group [Lead (Bulk Pb)]		1.1
Group [Asphalt]		1.0
Group [Asbestos filters and insulation]		1.0
Group [Leaded Rubber]		1.0
Group [Cloth]		0.9
Group [Aqueous Solutions]		0.9
Combined other		6.2
	Subtotal	100

a. See section 3 for additional information.

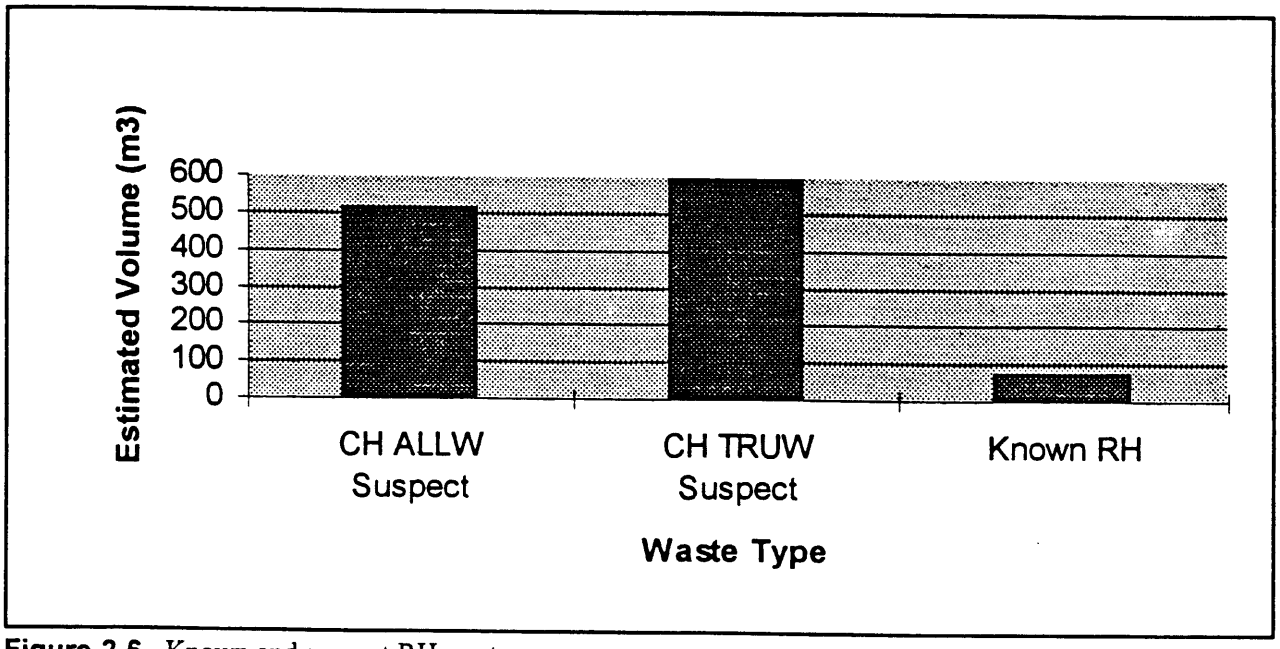


Figure 2-6. Known and suspect RH waste.

Table 2-6. Waste suspect or known to contain remote-handled material.

Waste category	Volume (m^3)
TSA CH ALLW Suspect to be RH (mixed and non-mixed)	509.4
TSA CH TRUW Suspect to be RH (mixed and non-mixed)	595.9
TSA ILTSF Waste Known to be RH	75.0
Total	1,180

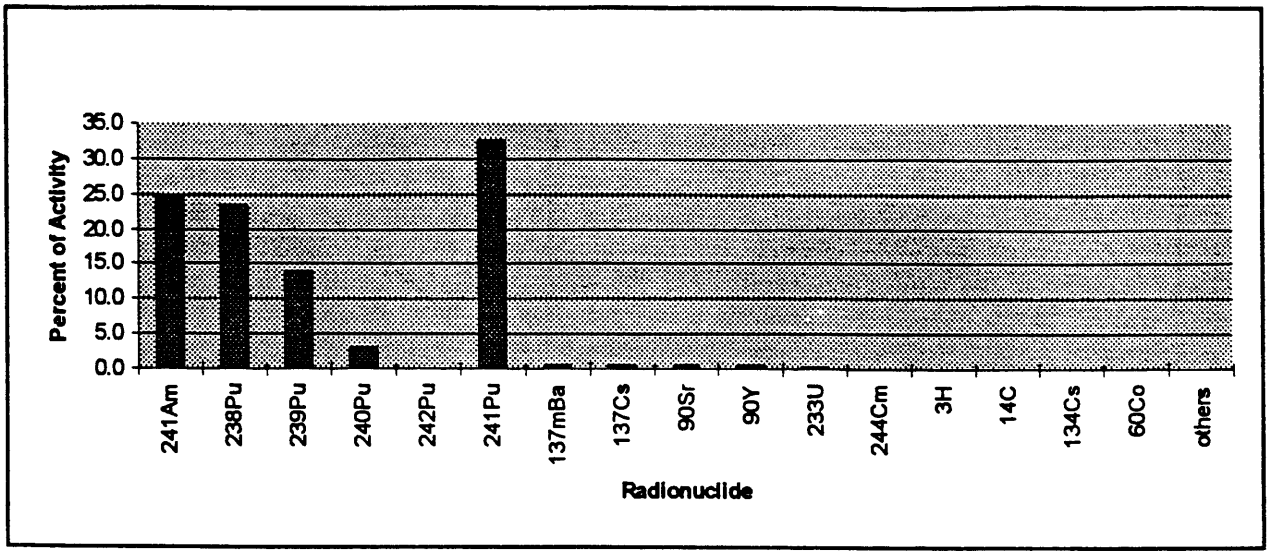


Figure 2-7. Primary radionuclide activity distribution for TSA waste.

Table 2-7. Inventory of primary radionuclides in TSA stored waste.[a]

Radionuclide /Mixture	TRU (Y/N)	Estimated Activity (Ci)	Percent of Total Estimated Activity
^{241}Am	Y	1.22e+05	24.696
^{238}Pu	Y	1.16e+05	23.415
^{239}Pu	Y	6.87e+04	13.907
^{240}Pu	Y	1.59e+04	3.215
^{242}Pu	Y	1.04e+00	0.000
^{241}Pu	N	1.61e+05	32.591
^{137m}Ba	N	2.25e+03	0.455
^{137}Cs	N	2.24e+03	0.453
^{90}Sr	N	2.02e+03	0.409
^{90}Y	N	2.02e+03	0.409
^{233}U	N	1.02e+03	0.206
^{244}Cm	N	5.39e+02	0.109
^{3}H	N	2.64e+02	0.053
^{134}Cs	N	1.11e+02	0.022
^{60}Co	N	1.00e+02	0.020
others	N	3.32e+02	0.067
	Subtotal	4.94e+05	100

a. Primary radionuclides greater than 100 curies estimated activity. See Table 4-1 and section 4.1, 4.2, 4.3, and 4.4 for additional listing of radionuclides and information.

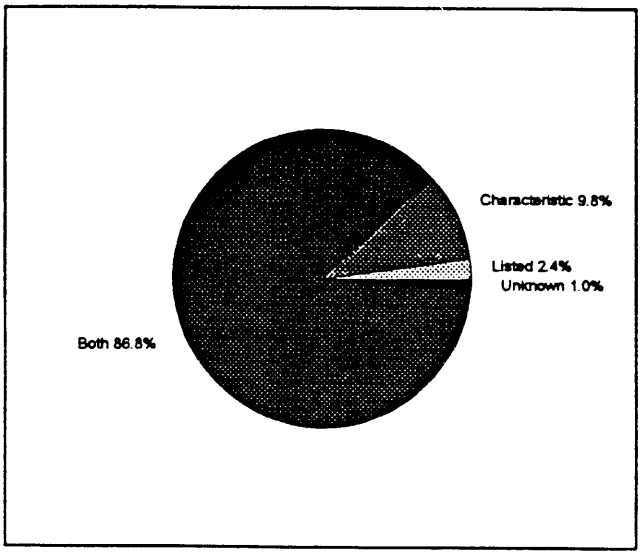


Figure 2-8a. RCRA categories of mixed ALLW.

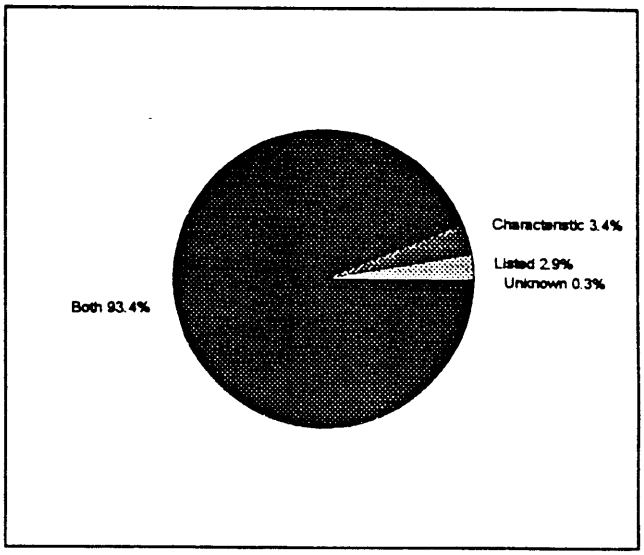


Figure 2-8b. RCRA categories of mixed TRUW.

Table 2-8. RCRA categories of stored mixed ALLW and TRUW.

RCRA category	Volume % mixed ALLW	Volume % mixed TRUW
Both characteristic and listed	86.8	93.4
Characteristic	9.8	3.4
Listed	2.4	2.9
Unknown	1.0	0.3
Total Estimated Volume	**24,635 m3**	**39,171 m3**

Table 2-9. Summary of special-case waste.

Description[a]	Number of wastestreams	Estimated mass (kg)
PCBs	2	5.85E+05[b]
Asbestos	13	6.06E+05[b]
Waste with suspect radioactive sources	9	<100 drums
Lead (total)	129	2.07E+06[c]
Bulk lead and lead shielding	—	3.36E+05[d]
Mercury	52	3.8E+05[e]
Gas cylinders, aerosol cans, nitrated organic resins, ether based scintillation fluids	2	—
Sodium, nitrates, oxidizers	3	—
Sodium nitrate, potassium nitrate salts	2	—
Sodium potassium (NaK)	1	—
Lithium and mercury batteries	2	—
Cadmium, cadmium and heavy metals	46	—
Free liquids, free liquids in vials, aerosol cans	5	—
Suspect classified parts	1	—
Beryllium contamination	4	—

a. From review of Tables 1, 3, and 5 of Appendices A and B.

b. Mass values based on estimated maximum concentrations from Table 5, Appendices A and B and a total estimated mass of 3.19E+07 kg.

c. Includes all lead contaminants from Table 5-2 based on estimated maximum concentrations of Table 5 Appendices A and B and a total estimated mass of 3.19E+07 kg.

d. Bulk lead and lead shielding mass value derived from Table 3-1 estimated percent distributions which are based on estimated typical concentrations from matrix Table 3, Appendices A and B and a total estimated mass of 3.19E+07 kg.

e. Includes bulk and distributed mercury based on estimated maximum concentrations of Table 5 Appendices A and B and a total estimated mass of 3.19E+07 kg.

Table 2-10. Waste summary by identifier category.[a]

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
Alpha Low Level Mixed Waste							
<10 nCi/g NONCOMBUSTIBLE	ID-MDO-838	1	0	0	0	0.21	150.00
ABSOLUTE 8 X 8 FILTERS	ID-RFO-335	78	0	0	0	16.54	5,500.00
ABSORBED LIQUIDS	ID-AEO-102	47	0	1	0	13.46	6,300.00
ALPHA HOT CELL WASTE	ID-AEO-104	209	0	1	0	47.81	11,000.00
AMERICIUM PROCESS RESIDUE	ID-RFO-241	114	0	0	0	24.17	19,000.00
ANL-W ANALYTICAL CHEMISTRY LAB GLASSWARE	ID-ANL-161	2	0	0	0	0.42	140.00
BENELEX AND PLEXIGLASS	ID-RFO-302	7	17	0	0	55.37	30,740.00
BENELEX AND PLEXIGLASS	ID-RFO-464	18	0	0	0	3.82	2,400.00
BLACKTOP, CONCRETE, DIRT AND SAND	ID-RFO-374	1,108	42	0	0	368.04	263,000.00
BLDG 374 DRY SLUDGE	ID-RFO-007	2,190	0	0	0	464.28	480,000.00
BLDG 776 PROCESS SLUDGE	ID-RFO-976	2	20	0	0	63.82	41,400.00
CEMENTED INSULATION FILTER MEDIA	ID-RFO-376	417	2	0	0	94.74	35,900.00
CEMENTED SLUDGE	ID-RFO-292	23	0	0	0	4.88	2,914.00
CHEM CELL RIP-OUT	ID-CPP-156	0	9	0	0	28.53	11,000.00
CHEMICAL WARFARE SERVICE FILTERS	ID-RFO-490	8	275	0	0	873.45	230,680.00
COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWE	ID-MDO-826	2	3	0	0	9.93	3,240.00
COMBUSTIBLE SOLIDS	ID-BCO-202	0	0	4	0	14.00	2,760.00
COMBUSTIBLE WASTE	ID-RFO-116	1	117	0	0	371.10	89,628.00
COMBUSTIBLES	ID-BTO-010	159	0	0	0	33.71	13,900.00
CONTAMINATED SOIL	ID-MDO-842	0	27	0	0	85.59	56,080.00
CUT UP GLOVEBOXES	ID-AEO-101	0	0	11	0	38.50	10,440.00
DECONTAMINATION AND DECOMMISSIONING WAST	ID-OFS-121	1	0	0	0	0.21	44.00
DIRT	ID-RFO-090	135	0	0	0	28.62	38,000.00
DIRT	ID-RFO-990	470	0	0	0	99.64	120,000.00
DRY PAPER AND RAGS	ID-RFO-330	4,230	711	0	0	3,150.63	950,000.00
EVAPORATOR SALTS	ID-RFO-005	49	1	0	0	13.56	10,850.00
FILTER SLUDGE	ID-RFO-290	1	0	0	0	0.21	127.00
FIREBRICK	ID-RFO-371	701	11	0	0	183.48	131,000.00
FIRST STAGE SLUDGE	ID-RFO-001	262	1	0	1	58.93	57,810.00
FULFLO INCINERATOR FILTERS	ID-RFO-328	1	0	0	0	0.21	78.00
GENERAL PLANT WASTE	ID-AEO-100	0	0	106	0	371.00	85,800.00
GLASS	ID-RFO-440	450	0	0	0	95.40	48,000.00
GLASS WASTE	ID-RFO-118	15	1	0	0	6.35	3,600.00
GRAPHITE	ID-RFO-300	87	0	0	0	18.44	9,600.00
GRAPHITE CORES	ID-RFO-301	6	0	0	0	1.27	630.00
HEPA FILTER WASTE	ID-RFO-119	87	16	0	0	69.16	16,700.00
HIGH-LEVEL ACID	ID-MDO-834	188	0	0	0	39.86	35,500.00
HIGH-LEVEL CAUSTIC	ID-MDO-835	844	0	0	0	178.93	146,000.00
HIGH-LEVEL SLUDGE/CEMENT	ID-MDO-836	4,152	0	0	0	880.22	1,190,000.00
INORGANIC SOLID WASTE	ID-RFO-122	58	0	0	0	12.30	9,300.00
INSULATION	ID-RFO-360	223	1	0	0	50.45	15,300.00
INSULATION AND CHEMICAL WARFARE SERVICE	ID-RFO-338	44	73	0	0	240.74	68,700.00
LABORATORY WASTE	ID-INL-150	15	0	0	2	3.60	1,210.00
LAUNDRY SLUDGE	ID-RFO-978	0	8	0	0	25.36	13,100.00
LEACHED AND CEMENTED RESIN	ID-RFO-432	42	0	0	0	8.90	5,700.00

Table 2-10. (continued).

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
LEACHED NONSPECIAL SOURCE METAL	ID-RFO-481	192	39	0	0	164.33	71,000.00
LEACHED RASHIG RINGS	ID-RFO-442	653	0	0	0	138.44	55,000.00
LEACHED RESIN	ID-RFO-431	2	0	0	0	0.42	366.00
LEADED RUBBER	ID-RFO-123	11	0	0	0	2.33	1,200.00
LEADED RUBBER GLOVES AND APRONS	ID-RFO-339	23	0	0	0	4.88	3,400.00
LEADED RUBBER GLOVES AND APRONS	ID-RFO-463	5	0	0	0	1.06	470.00
LOW SPECIFIC ACTIVITY METAL, GLASS, ETC.	ID-RFO-950	104	329	0	0	1,064.98	408,550.00
LOW SPECIFIC ACTIVITY PLASTICS, PAPER, ETC.	ID-RFO-900	346	6	0	0	92.37	36,793.00
LSA < 100 nCi/g COMBUSTIBLE	ID-MDO-847	721	0	0	0	152.85	84,700.00
LSA < 100 nCi/g NONCOMBUSTIBLE	ID-MDO-848	128	0	0	0	27.14	12,420.00
METAL WASTE	ID-RFO-117	38	44	0	0	147.54	62,300.00
METAL, EQUIPMENT, PIPES, VALVES, ETC.	ID-MDO-803	13	0	0	0	2.76	970.00
MOIST PAPER AND RAGS	ID-RFO-336	6,522	22	0	0	1,452.40	598,000.00
NONCOMBUSTIBLE EQUIPMENT BOXES	ID-MDO-824	0	264	0	0	836.88	265,000.00
NONCOMBUSTIBLE SOLIDS	ID-BCO-201	0	0	23	0	80.50	26,100.00
NONCOMPRESSIBLE, NONCOMBUSTIBLE	ID-BTO-020	294	0	0	0	62.33	31,500.00
NONSPECIAL SOURCE METAL	ID-RFO-480	1,537	2,007	0	0	6,688.03	2,572,000.00
NOT RECORDED - UNKNOWN	ID-RFO-000	645	0	0	0	136.74	60,000.00
OIL-DRI RESIDUE FROM INCINERATOR	ID-RFO-375	15	0	0	0	3.18	2,100.00
ORGANIC SETUPS, OIL SOLIDS	ID-RFO-003	4,636	6	0	0	1,001.85	1,009,100.00
PAPER, METALS, GLASS	ID-BCO-203	0	0	6	0	21.00	4,400.00
PLASTICS, TEFLON, WASH, PVC	ID-RFO-337	1,605	4	0	0	352.94	123,800.00
PRE-73 DRUMS	ID-RFO-9999	14,188	0	0	0	3,007.86	1,471,348.00
RESEARCH GENERATED WASTE NONCOMPACTIBLE	ID-OFS-111	1,316	2	0	0	285.33	291,600.00
SCRAP	ID-INL-155	6	1	0	0	4.44	828.00
SECOND STAGE SLUDGE	ID-RFO-002	1,615	0	0	0	342.38	410,000.00
SOLID LAB WASTE	ID-RFO-113	12	0	0	0	2.54	3,600.00
SOLIDIFIED GRINDING SLUDGE, ETC.	ID-BTO-030	0	0	0	2	0.42	560.00
SOLIDIFIED INORGANIC PROCESS SOLUTION	ID-RFO-114	19	0	0	0	4.03	3,100.00
SOLIDIFIED ORGANICS	ID-RFO-112	24	0	0	0	5.09	4,300.00
SOLIDIFIED SOLUTIONS	ID-BCO-204	3	0	0	0	0.64	729.00
SPECIAL SETUPS (CEMENT)	ID-RFO-004	490	0	0	0	103.88	130,000.00
TAN DECON HEAVY METAL SOLIDS AND DEBRIS	ID-TAN-163	0	0	0	0	0.32	263.08
TAN DECON SOLVENT WASTES	ID-TAN-162	0	0	0	0	7.14	7,120.49
TANTALUM	ID-RFO-320	135	0	0	0	28.62	17,000.00
UNLEACHED ION COLUMN RESIN	ID-RFO-430	9	0	0	0	1.91	1,610.00
UNLEACHED RASHIG RINGS	ID-RFO-441	777	0	0	0	164.72	67,000.00
WOOD	ID-RFO-970	12	28	0	0	91.30	27,800.00
	Subtotals	52,543	4,087	152	5	24,635.40	12,139,248.60
Alpha Low Level Non-mixed Waste							
ANLW ALPHA LOW LEVEL WASTE	CH-ANL-RDA	0	0	0	0	0.20	322.50
COMBUSTIBLE LAB WASTE	ID-INL-153N	28	0	0	0	5.94	1,493.00
CONCRETE, ASPHALT, ETC.	ID-RFO-960N	657	171	0	0	681.35	451,900.00
CRUCIBLE, LECO	ID-RFO-370N	23	0	0	0	4.88	3,680.00
FLUID BED ASH	ID-RFO-425N	6	0	0	0	1.27	1,050.00

Table 2-10. (continued).

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
GRAPHITE SCARFINGS	ID-RFO-310N	1	0	0	0	0.21	100.00
GRAPHITE WASTE	ID-RFO-115N	5	0	0	0	1.06	410.00
GRIT	ID-RFO-372N	4	0	0	0	0.85	500.00
NONCOMBUSTIBLE EQUIPMENT DRUMS	ID-MDO-825N	46	2	0	0	16.09	5,900.00
SAMPLE FUEL	ID-TRA-154N	1	0	0	0	0.21	210.00
SLUDGE	ID-RFO-095N	23	0	0	0	4.88	4,000.00
SLUDGE	ID-RFO-995N	205	8	0	0	68.82	60,400.00
	Subtotals	999	181	0	0	785.76	529,965.50
Transuranic Mixed Waste							
ABSOLUTE 8 X 8 FILTERS	ID-RFO-335T	49	5	0	0	26.24	6,522.00
ABSORBED LIQUIDS	ID-AEO-102T	58	0	12	0	54.30	21,570.00
ALHC UPGRADE DECON DEBRIS	CH-ANL-505T	0	0	0	0	1.18	775.64
ALPHA HOT CELL WASTE	ID-AEO-104T	195	0	5	0	58.84	14,900.00
AMERICIUM PROCESS RESIDUE	ID-RFO-241T	5	0	0	0	1.06	830.00
AMERICIUM SOURCES	ID-TAN-200T	1	0	0	0	0.21	23.00
ANL-W ACL COLD-LINE ABSORBED LIQUID, MIS	ID-ANL-163T	6	0	0	0	1.27	490.00
ANL-W FMF EFL Zr-U FUEL CASTING ALLOYS R	ID-ANL-162T	41	0	0	0	8.69	2,200.00
ANL-W HFEF ANALYTICAL CHEMISTRY AND META	ID-ANL-160T	0	0	0	1	0.21	230.00
ASBESTOS FILTERS	ID-MDO-805T	38	0	0	0	8.06	2,500.00
BENELEX AND PLEXIGLASS	ID-RFO-302T	15	6	0	0	22.20	13,464.00
BENELEX AND PLEXIGLASS	ID-RFO-464T	29	0	0	0	6.15	3,310.00
BLACKTOP, CONCRETE, DIRT, AND SAND	ID-RFO-374T	161	6	0	0	53.15	29,590.00
BLDG 374 DRY SLUDGE	ID-RFO-007T	2,166	0	0	0	459.19	482,470.00
BLDG 776 PROCESS SLUDGE	ID-RFO-976T	5	0	0	0	1.06	1,000.00
CEMENTED INSULATION AND FILTER MEDIA	ID-RFO-376T	2,096	5	0	0	460.20	172,430.00
CEMENTED SLUDGE	ID-RFO-292T	521	0	0	0	110.45	66,024.00
CHEMICAL WARFARE SERVICE FILTERS	ID-RFO-490T	68	788	0	0	2,512.38	678,240.00
CLASSIFIED PARTS	ID-MDO-815T	2	0	0	0	0.42	97.00
COARSE GRAPHITE	ID-RFO-312T	9	0	0	0	1.91	656.00
COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWEEEPINGS	ID-MDO-826T	3	25	0	0	79.89	25,370.00
COMBUSTIBLE EQUIPMENT DRUMS	ID-MDO-827T	9	0	0	0	1.91	710.00
COMBUSTIBLE SOLIDS	ID-BCO-202T	3	0	1	0	4.14	920.00
COMBUSTIBLE WASTE	ID-RFO-116T	3	850	0	0	2,695.14	621,305.00
COMBUSTIBLES	ID-BTO-010T	781	0	0	0	165.57	68,100.00
CONTAMINATED MERCURY OR GRAPHITE CRUCIBLE	ID-MDO-814T	2	0	0	0	0.42	120.00
CONTAMINATED SOIL	ID-MDO-842T	0	12	0	0	38.04	24,920.00
CUT UP GLOVEBOXES	ID-AEO-101T	0	5	56	0	211.85	71,950.00
DECONTAMINATION AND DECOMMISSIONING WASTE	ID-AEO-120T	2	0	0	0	0.12	150.00
DECONTAMINATION AND DECOMMISSIONING WASTE	ID-OFS-121T	0	8	0	0	25.36	11,000.00
DIRECT OXIDE REDUCTION SALT	ID-RFO-414T	5	0	0	0	1.06	430.00
DRY BOX GLOVES AND O-RINGS	ID-MDO-802T	121	0	0	0	25.65	6,900.00
DRY PAPER AND RAGS	ID-RFO-330T	892	1,762	0	0	5,774.64	1,457,150.00
EMPTY BOTTLES	ID-AEO-105T	7	0	0	0	1.48	320.00
EQUIPMENT	ID-RFO-980T	1	0	0	0	0.21	81.00
EVAPORATOR AND DISSOLVER SLUDGE	ID-MDO-811T	4	0	0	0	0.85	300.00

Table 2-10. (continued).

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
EVAPORATOR SALTS	ID-RFO-005T	3	0	0	0	0.64	550.00
FIREBRICK	ID-RFO-371T	331	13	0	0	111.38	55,600.00
FIRST STAGE SLUDGE	ID-RFO-001T	11,849	6	0	0	2,531.01	2,580,959.00
FULFLO INCINERATOR FILTERS	ID-RFO-328T	7	0	0	0	1.48	542.00
GENERAL PLANT WASTE	ID-AEO-100T	2	1	219	0	770.09	235,660.00
GLASS	ID-RFO-440T	974	13	0	0	247.70	107,930.00
GLASS FILTERS AND FIBERGLASS	ID-MDO-813T	3	0	0	0	0.64	170.00
GLASS WASTE	ID-RFO-118T	35	51	0	0	169.09	64,180.00
GLASS, FLASKS, SAMPLE VIALS, ETC.	ID-MDO-810T	13	0	0	0	2.76	970.00
GRAPHITE	ID-RFO-300T	1,848	0	0	0	391.78	204,800.00
GRAPHITE CORES	ID-RFO-301T	30	0	0	0	6.36	3,610.00
HEPA FILTER WASTE	ID-RFO-119T	222	106	0	0	383.08	100,610.00
HEPA FILTERS	ID-CPP-172	0	0	0	0	27.91	7,708.35
HIGH-LEVEL ACID	ID-MDO-834T	713	0	0	0	151.16	134,500.00
HIGH-LEVEL CAUSTIC	ID-MDO-835T	831	0	0	0	176.17	144,000.00
HIGH-LEVEL SLUDGE/CEMENT	ID-MDO-836T	26	0	0	0	5.51	7,500.00
INORGANIC SOLID WASTE	ID-RFO-122T	86	0	0	0	18.23	11,970.00
INSULATION	ID-RFO-360T	16	0	0	0	3.39	1,040.00
INSULATION AND CHEMICAL WARFARE SERVICE	ID-RFO-338T	209	5	0	0	60.16	20,330.00
LABORATORY WASTE	ID-INL-150T	104	0	0	18	25.86	78,614.00
LAUNDRY SLUDGE	ID-RFO-978T	0	3	0	0	9.51	7,900.00
LEACHED AND CEMENTED RESIN	ID-RFO-432T	243	0	0	0	51.52	30,300.00
LEACHED NONSPECIAL SOURCE METAL	ID-RFO-481T	700	93	0	0	443.21	214,400.00
LEACHED RASHIG RINGS	ID-RFO-442T	582	24	0	0	199.46	88,957.00
LEACHED RESIN	ID-RFO-431T	4	0	0	0	0.85	733.00
LEADED RUBBER	ID-RFO-123T	300	0	0	0	63.60	36,900.00
LEADED RUBBER GLOVES AND APRONS	ID-RFO-339T	696	4	0	0	160.23	108,400.00
LEADED RUBBER GLOVES AND APRONS	ID-RFO-463T	48	0	0	0	10.18	8,380.00
LOW SPECIFIC ACTIVITY (< 100 nCi/g) COMB	ID-MDO-847T	20	0	0	0	4.24	2,300.00
LOW SPECIFIC ACTIVITY (< 100 nCi/g) NONC	ID-MDO-848T	6	0	0	0	1.27	580.00
LOW SPECIFIC ACTIVITY METAL, GLASS, ETC.	ID-RFO-950T	6	4	0	0	13.95	5,450.00
LOW SPECIFIC ACTIVITY PLASTICS, PAPER, E	ID-RFO-900T	4	0	0	0	0.85	365.00
METAL WASTE	ID-RFO-117T	96	471	0	0	1,513.42	621,860.00
METAL, EQUIPMENT, PIPES, VALVES, ETC.	ID-MDO-803T	167	0	0	0	35.40	12,326.00
MISCELLANEOUS SOURCES	ID-INL-157T	2	0	0	0	0.42	150.00
MOIST PAPER AND RAGS	ID-RFO-336T	950	182	0	0	778.34	222,119.00
MOLTEN SALTS - 30% UNPULVERIZED	ID-RFO-409T	31	0	0	0	6.57	3,200.00
NONCOMBUSTIBLE EQUIPMENT BOXES	ID-MDO-824T	0	117	0	0	370.89	134,630.00
NONCOMBUSTIBLE SOLIDS	ID-BCO-201T	42	0	16	0	64.90	25,010.00
NONCOMPRESSIBLE, NONCOMBUSTIBLE	ID-BTO-020T	500	0	0	0	106.00	53,500.00
NONSPECIAL SOURCE METAL	ID-RFO-480T	1,018	1,586	0	0	5,243.44	2,387,960.00
NOT RECORDED - UNKNOWN	ID-RFO-000T	18,338	0	72	0	4,139.66	1,803,970.00
OIL-DRI RESIDUE FROM INCINERATOR	ID-RFO-375T	4	0	0	0	0.85	600.00
ORGANIC AND SLUDGE IMMOBILIZATION SYSTEM	ID-RFO-700T	9	0	0	0	1.91	2,400.00
ORGANIC SETUPS, OIL SOLIDS	ID-RFO-003T	2,596	6	0	0	569.37	631,400.00

Table 2-10. (continued).

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
PAPER, METALS, GLASS	ID-BCO-203T	26	0	0	0	5.51	2,500.00
PLASTICS, TEFLON, WASH, PVC	ID-RFO-337T	699	7	0	0	170.38	59,090.00
PRE-73 DRUMS	ID-RFO-9999T	21,282	0	0	0	4,511.78	2,207,022.00
RAGS, PAPER, WOOD, ETC.	ID-MDO-801T	35	0	0	0	7.42	2,100.00
REMOTE-HANDLED WASTE	ID-AEO-107T	30	0	0	0	6.36	1,600.00
RESEARCH GENERATED WASTE COMPACTIBLE & C	ID-AEO-110T	2	1	0	0	3.59	1,330.00
RESEARCH GENERATED WASTE NONCOMPACTIBLE	ID-OFS-111T	2,611	0	0	0	553.53	535,400.00
SCRAP	ID-INL-155T	9	4	0	0	14.59	6,240.00
SECOND STAGE SLUDGE	ID-RFO-002T	6,117	0	0	0	1,296.80	1,402,000.00
SODIUM - TRU	CH-ANL-180T	0	0	0	0	13.62	119,870.98
SODIUM POTASSIUM -NaK- TRU	CH-ANL-182T	0	0	0	0	0.25	2,721.55
SOLID BINARY SCRAP POWDER, ETC.	ID-BTO-040T	172	0	0	0	36.46	38,000.00
SOLID LAB WASTE	ID-RFO-113T	68	0	0	0	14.42	19,680.00
SOLIDIFIED FUEL SLUDGE	ID-CPP-151T	2	0	0	0	0.42	320.00
SOLIDIFIED GRINDING SLUDGE, ETC.	ID-BTO-030T	45	0	0	0	9.54	4,900.00
SOLIDIFIED INORGANIC PROCESS SOLUTION	ID-RFO-114T	334	0	0	0	70.81	58,400.00
SOLIDIFIED ORGANICS	ID-RFO-112T	774	0	0	0	164.09	191,620.00
SOLIDIFIED SOLUTIONS	ID-BCO-204T	4	0	0	0	0.85	971.00
SPECIAL SETUPS (CEMENT)	ID-RFO-004T	1,055	1	0	0	226.83	286,980.00
SPECIAL SOURCE MATERIAL	ID-AEO-106T	1	0	0	0	0.21	75.00
TANTALUM	ID-RFO-320T	322	2	0	0	74.60	29,400.00
TRANSURANIC CONTAMINATED LEAD DEBRIS	ID-INL-142T	4	4	0	0	12.12	5,950.32
TRU HEAVY METAL SLUDGE	ID-TRA-291T	0	0	0	0	2.08	1,070.48
TRU WASTE USED PRE-FILTERS	CH-ANL-503T	0	0	0	0	0.91	190.06
TRU-CD-HOT CELL WASTE	CH-ANL-241T	0	0	0	0	0.69	1,125.78
UNLEACHED ION COLUMN RESIN	ID-RFO-430T	20	0	0	0	4.24	3,590.00
UNLEACHED RASHIG RINGS	ID-RFO-441T	797	0	0	0	168.96	72,000.00
WASHABLES, RUBBER, PLASTICS	ID-RFO-460T	6	0	0	0	1.27	1,300.00
WOOD	ID-RFO-970T	10	34	0	0	109.90	33,840.00
	Subtotals	85,387	6,210	381	19	39,170.51	19,041,368.17
Transuranic Non-mixed Waste							
ANL-752 TRU WASTE	CH-ANL-542	0	0	0	0	2.29	816.01
ANLW TRANSURANIC HAZARDOUS SCRAP	CH-ANL-HST	0	0	0	0	0.40	610.08
ANLW TRANSURANIC SCRAP	CH-ANL-SCT	0	0	0	0	12.87	28,082.96
ASH HEELS	ID-RFO-421TN	101	0	0	0	21.41	9,700.00
COMBUSTIBLE LAB WASTE	ID-INL-153TN	2	0	0	7	1.91	1,607.00
CONCRETE, ASPHALT, ETC.	ID-RFO-960TN	46	0	0	0	9.75	8,900.00
CRUCIBLES AND SAND	ID-RFO-391TN	22	0	0	0	4.66	3,300.00
ELECTROREFINING SALT	ID-RFO-411TN	6	0	0	0	1.27	530.00
FLUID BED ASH	ID-RFO-425TN	2	0	0	0	0.42	350.00
GIBSON SALTS	ID-RFO-412TN	1	0	0	0	0.21	110.00
GRAPHITE HEELS	ID-RFO-311TN	6	1	0	0	4.44	1,790.00
GRAPHITE SCARFINGS	ID-RFO-310TN	16	0	0	0	3.39	1,700.00
GRAPHITE WASTE	ID-RFO-115TN	315	0	0	0	66.78	33,500.00
GRIT	ID-RFO-372TN	14	0	0	0	2.97	1,800.00

Table 2-10. (continued).

ID Code Name	ID Code	Drums	Boxes	Bins	Inserts	Volume (m^3) [b]	Mass (kg) [c]
INSULATION HEELS	ID-RFO-361TN	1	0	0	0	0.21	190.00
LECO CRUCIBLES	ID-RFO-370TN	12	0	0	0	2.54	1,920.00
MET SAMPLES FISSILE	ID-BTO-081TN	17	0	0	0	3.60	1,400.00
MISCELLANEOUS SOURCES	ID-BTO-012TN	1	0	0	0	0.21	160.00
MOLTEN SALTS - 30% PULVERIZED	ID-RFO-410TN	22	0	0	0	4.66	3,000.00
NEUTRON SOURCES	ID-BTO-015TN	3	0	0	0	0.64	4.00
NONCOMBUSTIBLE EQUIPMENT DRUMS	ID-MDO-825TN	179	9	0	0	66.48	24,100.00
PLASTIC, TYGON, MANIPULATOR BOOTS, ETC.	ID-MDO-804TN	220	0	0	0	46.64	11,220.00
PU NEUTRON SOURCES	ID-INL-152TN	8	0	1	1	5.41	2,470.00
RSWF TRANSURANIC WASTE	CH-ANL-538	0	0	0	0	6.22	25,387.12
SAMPLE FUEL	ID-TRA-154TN	9	0	0	0	1.91	1,890.00
SAND, SLAG AND CRUCIBLES	ID-RFO-392TN	7	0	0	0	1.48	1,300.00
SAND, SLAG, AND CRUCIBLE HEELS	ID-RFO-393TN	47	0	0	0	9.96	4,400.00
SCARFED GRAPHITE CHUNKS	ID-RFO-303TN	58	0	0	0	12.30	6,600.00
SLUDGE	ID-RFO-995TN	91	0	0	0	19.29	19,800.00
SOLIDIFIED SOLUTIONS	ID-BTO-050TN	1	0	0	0	0.21	99.00
SOOT	ID-RFO-422TN	24	0	0	0	5.09	2,200.00
TRU PYROCHEMICAL SALT WASTE	ID-RFO-124TN	15	0	0	0	3.18	1,100.00
VIRGIN INCINERATOR ASH	ID-RFO-420TN	11	0	0	0	2.33	1,700.00
ZINC MAGNESIUM ALLOY METAL	ID-RFO-416TN	1	0	0	0	0.21	220.00
	Subtotals	1,258	10	1	8	325.37	201,956.17
	Grand Totals	140,187	10,488	534	32	64,917	31,912,540

a. As derived from the INEL IMWI database, September 1995.

b. Container volumes are estimated at: 1 drum = 0.212m^3, 1 box = 3.17m^3, 1 bin = 3.50m^3, 1 insert = 0.212m^3 for consistency.

c. The gross mass includes container mass.

THE CONTENTS OF THIS SECTION ARE
THE HIGHEST QUALITY AVAILABLE

INITIAL MD DATE 10/08/2001

3. WASTE MATRIX PHYSICAL AND CHEMICAL COMPOSITION CHARACTERIZATION

The bulk of the stored wastes consist of physical mixtures of various materials and components generally in solid form, with some absorbed liquids. This section describes the stored waste inventory in terms of the relative mass fractions of the components and materials which make up the bulk waste matrix. An estimate of the chemical composition of those waste matrix materials is also provided. This information represents best estimates of the waste matrix composition to date based on engineering evaluation of previous characterization documentation and available waste generator process information. The information provided in this section is based on work by Gale (1994)[a] and Raivo (1995).[b]

Figure 3-1 and Table 3-1 present summary distribution of the waste matrix by component for ALLW and TRUW combined. Table 3-1 includes matrix identification codes per current DOE Waste Treatability Group Guidance.[3-1]

Design basis estimates for chemical analysis for each constituent comprising the general waste matrix are presented in Tables 3-2, 3-3 and 3-4. Table 3-2 presents an estimate of chemical composition (elemental plus water and inert) of the constituents defined in the appendices. Table 3-3 presents an estimation of chemical composition of the inert fraction of constituents listed in Table 3-2 expressed as a fraction of the inert chemicals. Table 3-4 presents an estimation of chemical composition of the inert fraction of constituents listed in Table 3-2 expressed as a fraction of the total constituent chemicals.

Although not categorized as a stored INEL TSA waste stream, variable amounts of INEL RWMC soil may also be included for treatment as a result of retrieval efforts. Tables 3-5, 3-6, 3-7 and 3-8 present typical characterization information for RWMC soil derived from actual soil samples.[3-2] Table 3-5 presents particle size distribution and density information. Table 3-6 presents cation exchange capacity information. Table 3-7 presents a mineral content analysis, and Table 3-8 presents a chemical content analysis of RWMC soil.

Also, some soil from the Rocky Flats Plant past operations may be included as waste in the stored TSA waste. Tables 3-2, 3-3, and 3-4 present general estimated composition values for RFP soil. The detailed data in the appendices provide estimates of RFP soil content in the waste at the content code level. Tables 3-9, 3-10, 3-11, and 3-12 present additional characterization information for RFP soil derived from actual soil samples.[3-2] Table 3-9 presents particle size distribution and density information. Table 3-10 presents cation exchange capacity information. Table 3-11 presents a mineral content analysis, and Table 3-12 presents a chemical content analysis of RFP soil.

Both RWMC and RFP soil can be subjectively categorized as being very abrasive to operating (e.g., rotating) machinery.

---

a. L. G. Gale, Estimated Waste Matrix Compositions of ALLW for Treatment Design Basis, EDF IWPF-0047, February 1994.

b. B. D. Raivo, Estimated Waste Matrix Compositions of INEL stored waste, EDF PSPI-015546-14, December 15, 1995.

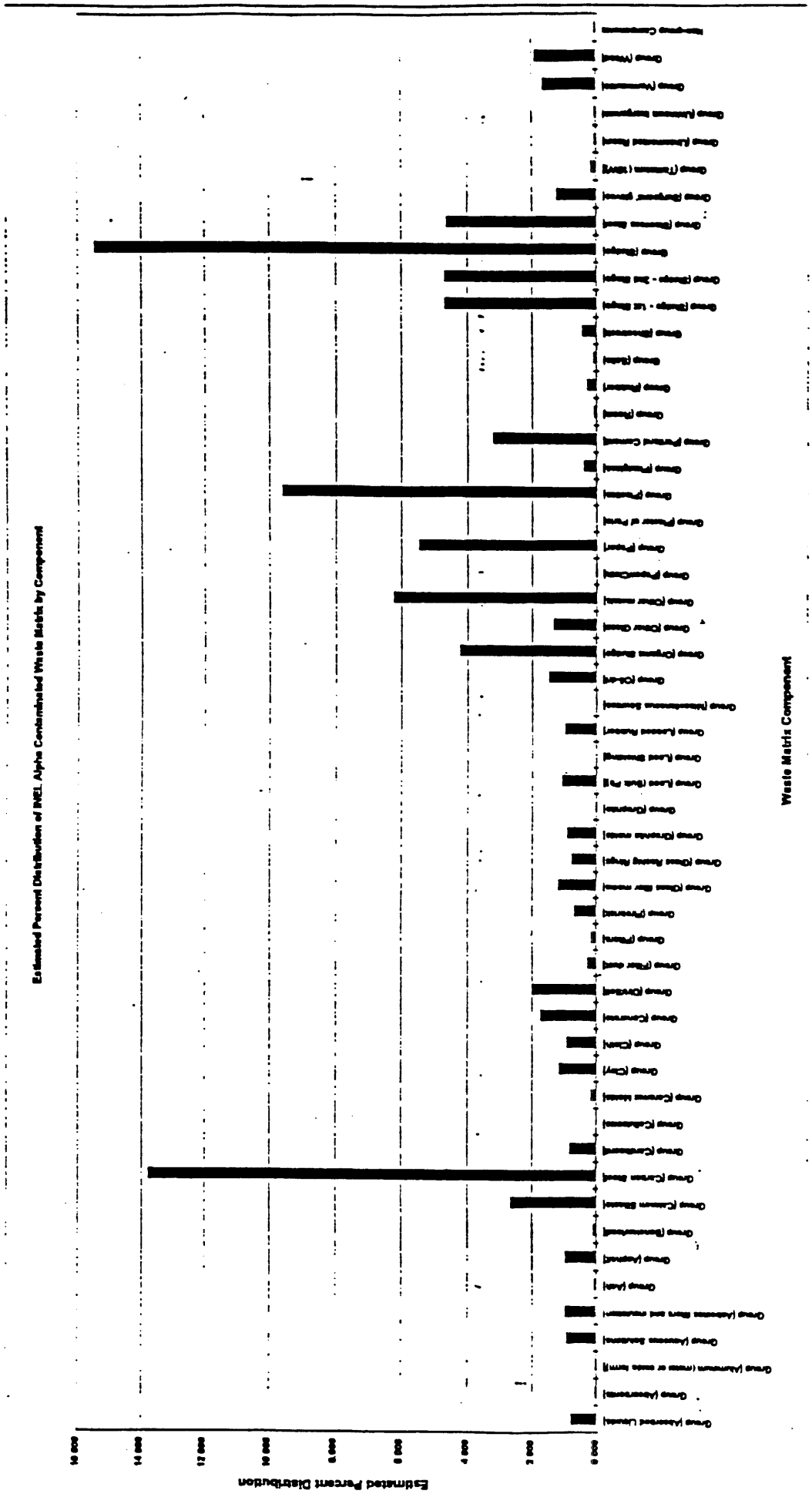


Figure 3-1. Distribution of waste matrix by component.

Table 3-1. INEL alpha contaminated waste matrix composition summary by component.[a]

Matrix code[b]	Waste matrix component[c]	Component mass (kg)[d]	Fraction of total identified mass	Estimated percent distribution of total estimated mass[e]
S3113	Group [Absorbed Liquids]	2.0690e+05	0.0079	0.790
S3121	Group [Absorbents]	8.5000e+03	0.00032	0.032
S3112	Group [Aluminum (metal or oxide form)]	3.6920e+03	0.00014	0.014
S3121	Group [Aqueous Solutions]	2.3800e+05	0.00909	0.909
S5410	Group [Asbestos filters and insulation]	2.5060e+05	0.00957	0.957
S3111	Group [Ash]	1.3350e+04	0.00051	0.051
S5450	Group [Asphalt]	2.5180e+05	0.00961	0.961
S5440	Group [Benelex/lead]	2.2010e+04	0.00084	0.084
S3114	Group [Calcium Silicate]	6.9140e+05	0.02639	2.639
S5111	Group [Carbon Steel]	3.6100e+06	0.13777	13.777
S5330	Group [Cardboard]	2.1140e+05	0.00807	0.807
S5330	Group [Cellulosics]	7.9800e+02	0.00003	0.003
S5123	Group [Ceramic Molds]	4.1980e+04	0.0016	0.160
S3113	Group [Clay]	2.9900e+05	0.01141	1.141
S5330	Group [Cloth]	2.3890e+05	0.00912	0.912
S3150	Group [Concrete]	4.4900e+05	0.01714	1.714
S4100	Group [Dirt/Soil]	5.2160e+05	0.01991	1.991
S5410	Group [Filter dust]	6.7750e+04	0.00259	0.259
S5320	Group [Filters]	3.7990e+04	0.00145	0.145
S5123	Group [Firebrick]	1.7270e+05	0.00659	0.659
S5410	Group [Glass filter media]	3.0600e+05	0.01168	1.168
S3117	Group [Glass Rashig Rings]	1.9650e+05	0.0075	0.750
S5126	Group [Graphite molds]	2.3340e+05	0.00891	0.891
S3110	Group [Graphite]	1.5590e+03	0.00006	0.006
X7211	Group [Lead (Bulk Pb)]	2.7510e+05	0.0105	1.050
X7210	Group [Lead Shielding]	6.2000e+02	0.00002	0.002
S5311	Group [Leaded Rubber]	2.5000e+05	0.00954	0.954
S3100	Group [Miscellaneous Sources]	0.0000e+00	0	0.000
S3113	Group [Oil-dri]	3.8100e+05	0.01454	1.454
S3114	Group [Organic Sludge]	1.1030e+06	0.04211	4.211
S5122	Group [Other Glass]	3.4320e+05	0.0131	1.310
S5110	Group [Other metals]	1.6320e+06	0.06229	6.229
S5330	Group [Paper/Cloth]	1.1370e+03	0.00004	0.004
S5330	Group [Paper]	1.4320e+06	0.05465	5.465
S3113	Group [Plaster of Paris]	8.5000e+02	0.00003	0.003
S5310	Group [Plastics]	2.5150e+06	0.096	9.600
S5313	Group [Plexiglass]	9.9160e+04	0.00378	0.378
S3121	Group [Portland Cement]	8.3660e+05	0.03193	3.193
S3211	Group [Resin]	1.4760e+04	0.00056	0.056
S5310	Group [Rubber]	7.2190e+04	0.00276	0.276
S3140	Group [Salts]	1.9430e+04	0.00074	0.074

Table 3-1. (continued).

Matrix code[b]	Waste matrix component[a]	Component mass (kg)[d]	Fraction of total identified mass	Estimated percent distribution of total estimated mass[e]
S5120	Group [Sheetrock]	1.1160e+05	0.00426	0.426
S3121	Group [Sludge - 1st Stage]	1.2270e+06	0.04683	4.683
S3121	Group [Sludge - 2nd Stage]	1.2270e+06	0.04683	4.683
S3121	Group [Sludge]	4.0490e+06	0.15454	15.454
S5111	Group [Stainless Steel]	1.2100e+06	0.04617	4.617
S5310	Group [Surgeons' gloves]	3.1690e+05	0.0121	1.210
S5111	Group [Tantalum (10W)]	3.8440e+04	0.00147	0.147
S3211	Group [Uncemented Resin]	9.1840e+03	0.00035	0.035
S5100	Group [Unknown Inorganics]	7.1090e+03	0.00027	0.027
S3113	Group [Vermiculite]	4.2910e+05	0.01638	1.638
S5320	Group [Wood]	4.9320e+05	0.01883	1.883
	Non-group Components[f]	3.2042e+03	0.00011	0.011
	Total	2.6173e+07	1.00	100

a. EDF PSPI-015546-14, 12/15/95.

b. Matrix codes per DOE Waste Treatability Group Guidance, DOE/LLW-217, Rev. 0, January 1995.

c. As derived from rollup of the IMWI database %wt composition splits as of 9/95, which are based on A. L. Rubert, References for Descriptions and Matrix Compositions of Content Code Wastes Stored at the Transuranic Storage Area, IMWI-EDF-004, June 21, 1995; L. G. Gale, B. D. Raivo, Estimated Waste Matrix Compositions of a-LL Waste for Treatment Design Bases, IWPF-EDF-0047, June 22, 1994; and current updates provided in IMWI.

d. As derived from rollup of database %wt composition splits.

e. Estimated total mass of INEL alpha-contaminated waste is 3.19E+07 kg (6.49E+04 m3).

f. Other minor matrix components similar to, but not in the group categories, may be assigned to individual waste streams; see detailed information and electronic tables.

Table 3-2. Chemical composition of waste constituents of the waste stored in the TSA.

Matrix Code (a)	Waste Matrix Component (a)	Constituent (b)	Wt% of waste constituent									References / Notes
			Carbon	Hydrogen	Oxygen	Nitrogen	Sulfur	Chlorine	Fluorine	Water	Inert	
		Non-Combustible										
		Glass										
S3117	Group [Glass Rashig Rings]	Glass Raschig rings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5122	Group [Other Glass]	Other glass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Metals										
S5111	Group [Carbon Steel]	Carbon steel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5111	Group [Stainless Steel]	Stainless steel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3112	Group [Aluminum (metal or oxide form)]	Aluminum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5111	Group [Tantalum (10W)]	Tantalum 10W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
X7211	Group [Lead (Bulk Pb)]	Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	Group [Lead (Bulk Pb)] same inert composition as Lead from L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
X7210	Group [Lead Shielding]	Lead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	Group [Lead Shielding] same inert composition as Lead from L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5110	Group [Other metals]	0.999 Misc. Metals:0.001HVPM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	Ratio Group [Other Metals] to 0.999 Misc Metals:0.001 HVPM based on Content Code 480 and IMWI total estimated masses for content codes and EDF 0047 for Misc. Metal to HVPM splits.
		Miscellaneous metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		HVPM (Zn, Cd)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Miscellaneous Non-Combustible										
S5123	Group [Ceramic Molds]	Ceramic molds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5123	Group [Firebrick]	Firebrick	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	97.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3150	Group [Concrete]	Concrete	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.72	91.28	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Portland Cement]	Portland cement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S4100	Group [Dirt/Soil]	Dirt/soil (RFP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	90.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3111	Group [Ash]	Ash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Oil-dri]	Oil-Dri	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Vermiculite]	Vermiculite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3140	Group [Salts]	Evap. salts—CC #5	0.85	0.13	0.00	0.00	0.00	0.00	0.00	0.13	98.88	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5100	Group [Unknown Inorganics]											
S3114	Group [Calcium Silicate]											
S3113	Group [Clay]											
S3121	Group [Absorbents]											
S3113	Group [Plaster of Paris]											
S3100	Group [Miscellaneous Sources]											
		Filters/Insulation										
S5320	Group [Filters]	Wood	46.94	5.00	35.61	0.00	0.05	0.00	0.00	10.00	2.42	Assume inert fractions same composition as wood per IWPF EDF-0047, Content Code 30.
S5410	Group [Glass filter media]	Glass filter media	3.96	0.54	0.00	0.00	0.00	0.00	0.00	5.00	90.50	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5410	Group [Asbestos filters and insulation]	Asbestos filter media	3.96	0.54	0.00	0.00	0.00	0.00	0.00	5.00	90.50	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Magnesia (insulation)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	98.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5410	Group [Filter dust]	Filter dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	90.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Inorganic Sludge										
S3121	Group [Sludge]	0.5 high Na2O:0.5 high CaO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	40.00	From IWPF EDF-0047, (CC 7), group [Sludge] is 50% 1st Stage, 50% 2nd Stage sludge.
S3121	Group [Sludge - 1st Stage]	Sludge—high Na20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	40.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Sludge - 2nd Stage]	Sludge—high CaO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	40.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Aqueous Solutions]	Aqueous solutions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Partially Combustible										
S5311	Group [Leaded Rubber]	Leaded rubber	33.16	4.47	1.01	0.28	0.51	0.00	0.00	0.00	60.56	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3114	Group [Organic Sludge]	Organic sludge	26.69	3.65	0.00	0.00	0.00	39.69	0.00	0.00	29.97	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3211	Group [Uncemented Resin]	Uncemented resin	83.03	6.97	0.00	0.00	0.00	0.00	0.00	10.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Cemented resins	27.68	2.32	0.00	0.00	0.00	0.00	0.00	20.00	50.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3211	Group [Resin]	Uncemented resin	83.03	6.97	0.00	0.00	0.00	0.00	0.00	10.00	0.00	EDF 0047 cemented resin consists of resin and portland cement, IMWI Group identifiers split the cemented resin into resin and portland cement, (Ex. Content Code 432). Use inert fraction for Group [Uncemented Resin] for the Group [Resin].
S5450	Group [Asphalt]	Asphalt	4.29	0.49	0.05	0.05	0.12	0.00	0.00	0.00	95.01	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5440	Group [Benelex/lead]	Benelex/lead	33.20	3.53	25.19	0.00	0.03	0.00	0.00	3.35	34.70	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5120	Group [Sheetrock]	Sheetrock	0.41	0.06	0.42	0.00	0.00	0.00	0.00	20.77	78.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Absorbed Liquids]											
		Combustibles										
		Plastics										
S5310	Group [Plastics]	0.800 Poly:0.199 PVC:0.001Teflon	77.40	11.86	2.09	0.09	0.02	7.11	0.08	0.00	1.36	The plastic ratio (0.8 Poly:0.199 PVC:0.001 Teflon) From EDF 0047 is based on the narrative in EGG-WM-8503 and WM-F1-828021 (WASTDAT7.wk3).
		Poly	84.93	13.40	0.35	0.11	0.02	0.00	0.00	0.00	1.19	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94.
		PVC	47.38	5.73	9.09	0.00	0.01	35.72	0.00	0.00	2.07	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Teflon	24.00	0.00	0.00	0.00	0.00	0.00	76.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5313	Group [Plexiglass]	Plexiglas	59.99	8.05	31.96	0.00	0.00	0.00	0.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Rubber										
S5310	Group [Rubber]	Rubber	76.23	10.28	2.32	0.65	1.18	0.00	0.00	0.00	9.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5310	Group [Surgeons' gloves]	Surgeons' glove	76.23	10.28	2.32	0.65	1.18	0.00	0.00	0.00	9.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Miscellaneous Combustibles										
S3110	Group [Graphite]	Graphite	99.19	0.70	0.00	0.00	0.01	0.00	0.00	0.00	0.10	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5126	Group [Graphite molds]	Graphite	99.19	0.70	0.00	0.00	0.01	0.00	0.00	0.00	0.10	Assume inert fraction composition is the same as Graphite.
S5330	Group [Paper/Cloth]	Paper/Cloth	49.54	5.27	37.59	0.00	0.05	0.00	0.00	5.00	2.55	Assume 50:50 paper/cloth split with composition from EDF-0047.
S5330	Group [Paper]	Paper	49.54	5.27	37.59	0.00	0.05	0.00	0.00	5.00	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cloth]	Cloth	49.54	5.27	37.59	0.00	0.05	0.00	0.00	5.00	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5320	Group [Wood]	Wood	46.94	5.00	35.61	0.00	0.05	0.00	0.00	10.00	2.42	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cardboard]	Cardboard	49.54	5.27	37.59	0.00	0.05	0.00	0.00	5.00	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cellulosics]	Paper, Cardboard	49.54	5.27	37.59	0.00	0.05	0.00	0.00	5.00	2.55	Assume inert fractions same composition as Paper, Cardboard per IWPF EDF-0047.

(a) Matrix Codes per DOE Waste Treatability Group Guidance, DOE/LLW-217, Rev. 0, January 1995; Matrix Component Groupings per IMWI 9/95 with reference to IMWI EDF-004, A.L. Rubert, June 21, 1995.
(b) IWPF EDF 0047, L.G. Gale, June 22, 1994

Table 3-4. Chemical composition of the inert fraction of waste constituents stored in the TSA (expressed as a fraction of the total constituent chemicals).

Matrix Code (a)	Waste Matrix Component (a)	Constituent (b)	Metals Form (b,c)	Wt % of inert fraction: Aluminum	Boron	Barium	Calcium	CaSO4	Cadmium	Carbon	Chromium	Copper	Gallium	Iron	Lead	Magnesium	Manganese	Nickel	Phosphorus	Potassium	KNO3	Silicon	Sodium	NaNO3	Tantalum	Tin	Titanium	Tungsten	Vanadium	Zinc	SO3	Cl	CO2	Total	Reference / Notes
	Non-Combustible																																		
	Glass																																		
S3117	Group [Glass Raschig Rings]	Glass Raschig rings	2	0.00	12.80	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5122	Group [Other Glass]	Other glass	2	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Metals																																		
S5111	Group [Carbon Steel]	Carbon steel	1	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	99.10	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5111	Group [Stainless Steel]	Stainless steel	1	0.00	0.00	0.00	0.00	0.00	0.00	0.03	19.00	0.00	0.00	71.97	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3112	Group [Aluminum (metal or oxide form)]	Aluminum	1	98.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5111	Group [Tantalum (10W)]	Tantalum 10W	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
X7211	Group [Lead (Bulk Pb)]	Lead	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	99.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	100.00	Group [Lead (Bulk Pb)] same inert composition as Lead from L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
X7210	Group [Lead Shielding]	Lead	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	99.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	Group [Lead Shielding] same inert composition as Lead from L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5110	Group [Other metals]	0.999 Misc. Metals:0.001 HVP	1	29.97	0.00	0.00	0.00	0.00	1.05	0.00	1.00	9.99	0.00	48.95	1.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	100.00	Metals:0.001 HVPM based on Content Code 480 and IMMI total estimated masses for content codes and EDF 0047 for Misc. Metal to HVPM split.
		Miscellaneous metal	1	30.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	10.00	0.00	50.00	1.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		HVPM (Zn, Cd)	1	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Miscellaneous Non-Combustible																																		
S5123	Group [Ceramic Molds]	Ceramic molds	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.84	0.00	0.00	0.00	0.00	0.00	38.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5123	Group [Firebrick]	Firebrick	2	41.71	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.97	0.00	0.00	0.00	0.00	0.00	50.44	0.00	0.00	0.00	0.00	1.94	0.00	0.00	0.00	0.00	0.00	0.00	97.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3150	Group [Concrete]	Concrete	2	0.99	0.00	0.00	8.94	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.37	0.00	0.00	0.00	0.00	0.00	80.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.18	91.29	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Portland Cement]	Portland cement	2	6.56	0.00	0.00	59.77	0.00	0.00	0.00	0.00	0.00	0.00	2.78	0.00	2.41	0.00	0.00	0.00	0.00	0.00	20.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.00	1.03	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S4100	Group [Dirt/Soil]	Dirt/soil (RFP)	2	11.43	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	4.58	0.00	2.81	0.00	0.00	0.00	2.78	0.00	63.83	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3111	Group [Ash]	Ash	2	15.22	0.00	0.12	7.74	0.00	0.51	0.00	1.84	1.70	0.00	28.30	7.81	5.37	0.15	1.13	0.10	0.36	0.04	23.13	1.33	0.08	0.00	0.17	0.18	0.00	0.00	3.56	0.33	0.01	0.79	100.01	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Oil-dri]	Oil-Dri	2	25.52	0.00	0.00	2.23	0.00	0.00	0.00	0.00	0.00	0.00	4.12	0.00	4.77	0.00	0.00	0.00	0.48	0.00	57.65	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Vermiculite]	Vermiculite	2	18.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.24	0.00	17.06	0.00	0.00	0.00	0.00	0.00	19.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3140	Group [Salts]	Evap. salts—CC #5	2	1.91	0.00	0.00	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.44	0.00	0.00	0.00	0.30	28.17	8.44	0.17	56.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.88	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5100	Group [Unknown Inorganics]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
S3114	Group [Calcium Silicate]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
S3113	Group [Clay]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
S3121	Group [Absorbents]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
S3113	Group [Plaster of Paris]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
S5100	Group [Miscellaneous Sources]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Filters/Insulation																																		
S5320	Group [Filters]	Wood	2	0.15	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.11	0.00	0.28	2.42	Paper, Cardboard, Wood, per IWPF EDF-0047, Content Code 30.
S5410	Group [Glass filter media]	Glass filter media	2	5.68	9.48	3.79	2.84	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.95	0.00	0.00	0.00	1.89	0.00	53.88	9.95	0.00	0.00	0.00	0.00	0.00	0.00	2.14	0.00	0.00	90.48	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5410	Group [Asbestos filters and insulation]	Asbestos filter media	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.15	0.00	0.00	0.00	0.00	0.00	71.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.50	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Magnesia (insulation)	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5410	Group [Filter dust]	Filter dust	2	11.43	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	4.58	0.00	2.81	0.00	0.00	0.00	2.78	0.00	63.83	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Inorganic Sludge																																		
S3121	Group [Sludge]	0.5 high Na2O:0.5 high CaO	2	2.53	0.00	0.00	5.48	0.00	0.00	0.00	0.00	0.03	0.07	1.12	2.47	0.19	3.15	0.00	0.00	0.00	0.00	1.64	0.00	18.48	6.75	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	40.00	From IWPF EDF-0047, (CC 7), group [Sludge] is 50% 1st Stage, 50% 2nd Stage sludge.
S3121	Group [Sludge - 1st Stage]	Sludge—high Na2O	2	3.34	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.04	0.07	2.20	2.61	0.28	2.08	0.00	0.00	0.00	0.00	1.78	0.00	14.44	11.26	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	40.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Sludge - 2nd Stage]	Sludge—high CaO	2	1.72	0.00	0.00	8.04	0.00	0.00	0.00	0.00	0.02	0.07	0.03	2.34	0.12	4.22	0.00	0.00	0.00	0.00	1.50	0.00	18.53	2.24	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	40.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3121	Group [Aqueous Solutions]	Aqueous solutions		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Partially Combustible																																		
S5311	Group [Leaded Rubber]	Leaded rubber	2	0.04	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.05	0.00	0.04	58.44	0.25	0.00	0.00	0.05	0.00	0.00	0.17	0.05	0.00	0.00	0.00	0.08	0.00	0.00	2.53	0.00	0.00	60.57	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3114	Group [Organic Sludge]	Organic sludge	2	0.00	0.00	0.00	11.38	0.00	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.04	0.00	0.00	0.00	0.17	0.00	16.17	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	29.97	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3211	Group [Uncemented Resin]	Uncemented resin	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Cemented resins	2	3.48	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	0.00	1.27	0.00	0.00	0.00	0.00	0.00	10.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
																																			EDF 0047 cemented resin consists of resin and portland cement, IMMI Group identifiers split the cemented resin into resin and portland cement. (Ex. Content Code 432). Use inert fraction for
S3211	Group [Resin]	Uncemented resin	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Group [Uncemented Resin] for the Group [Resin].
S5450	Group [Asphalt]	Asphalt	2	0.12	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.16	0.00	0.12	0.00	0.00	0.00	90.81	0.81	0.00	0.00	0.00	0.00	0.00	0.89	0.00	1.43	0.00	0.00	95.00	From EDF 0047 is based on the narrative in EGG-WM-8503 and WM-F1-826021 (WASTDAT7.wk3).
S5440	Group [Benelex/lead]	Benelex/lead	1	0.11	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.08	32.98	0.08	0.03	0.00	0.00	0.00	0.00	0.28	0.29	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.08	0.00	0.20	34.70	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5120	Group [Sheetrock]	Sheetrock	2	0.05	0.00	0.00	0.24	77.56	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.05	0.08	78.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S3113	Group [Absorbed Liquids]			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Combustibles																																		
	Plastics																																		
S5310	Group [Plastics]	0.800 Poly:0.199 PVC:0.001Teflon	2	0.00	0.00	0.06	1.09	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	1.36	The plastic ratio (0.8 Poly:0.199 PVC:0.001 Teflon) From EDF 0047 is based on the narrative in EGG-WM-8503 and WM-F1-826021 (WASTDAT7.wk3).
		Poly	2	0.00	0.00	0.00	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94.
		PVC	2	0.00	0.00	0.48	0.02	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.13	0.00	0.00	0.00	2.07	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
		Teflon		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5313	Group [Plexiglass]	Plexiglas		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Rubber																																		
S5310	Group [Rubber]	Rubber	2	0.09	0.00	0.00	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.01	0.58	0.00	0.00	0.12	0.00	0.00	0.39	0.12	0.00	0.00	0.00	0.28	0.00	0.00	5.80	0.00	0.00	9.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5310	Group [Surgeons' gloves]	Surgeons' glove	2	0.09	0.00	0.00	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.01	0.58	0.00	0.00	0.12	0.00	0.00	0.39	0.12	0.00	0.00	0.00	0.20	0.00	0.00	5.80	0.00	0.00	8.34	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
	Miscellaneous Combustibles																																		
S3110	Group [Graphite]	Graphite	1	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.01	0.00	0.10	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5126	Group [Graphite molds]	Graphite	1	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.10	Assume inert fraction composition is the same as Graphite.
S5330	Group [Paper/Cloth]	Paper/Cloth	2	0.16	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.05	0.00	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.30	2.55	Assume 50:50 paper/cloth split with composition from EDF-0047.
S5330	Group [Paper]	Paper	2	0.16	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.05	0.00	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.30	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cloth]	Cloth	2	0.16	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.05	0.00	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.30	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5320	Group [Wood]	Wood	2	0.15	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.41	0.41	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.11	0.00	0.28	2.42	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cardboard]	Cardboard	2	0.16	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.05	0.00	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.30	2.55	L.G. Gale, B.D. Raivo, IWPF EDF-0047, 6/22/94
S5330	Group [Cellulosics]	Paper, Cardboard	2	0.16	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.13	0.05	0.00	0.00	0.00	0.00	0.43	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.30	2.55	Assume inert fractions same composition as Paper, Cardboard per IWPF EDF-0047.

(a) Matrix Codes per DOE Waste Treatability Group Guidance, DOE/LLW-217, Rev. 0, January 1995; Matrix Component Groupings per IMMI 9/95 with reference to IMMI EDF-004, A.L. Rubert, June 21, 1995.
(b) IWPF EDF 0047, L.G. Gale, June 22, 1994
(c) 1 Metals assumed to be in elemental form
2 Metals assumed to be in oxide form
3 Metals assumed to be in chloride form

Table 3-5. Particle size distribution and mean density of RWMC soil.[a]

Particle size distribution of as received RWMC soil

Particle size (mm)	Wt%	Cumulative Wt%
-0.075	10.98	10.98
0.075-0.15	15.35	26.33
0.15-0.3	5.63	31.96
0.3-0.6	6.64	38.60
0.6-1	5.98	44.58
1-2.36	12.98	57.56
2.36-25.0	42.44	100

Particle size and density distribution of RWMC soil. Portion <1 mm blended (44.5% < 1 mm).

Particle size (mm)	Wt%	Cumulative Wt%	Mean density (g/cm^3)
-0.075	24.64	24.64	2.55
0.075-0.15	34.43	59.07	2.48
0.15-0.3	12.62	71.69	2.58
0.3-0.6	14.89	86.58	2.66
0.6-1	13.42	100	2.54
		Mass fraction ave density	2.55

a. Sample (one ten gallon drum, 35 kg) collected from the Lost River Spreading Area A adjacent to the RWMC which is commonly used as a source of soil fill for the RWMC, EGG-WTD-9749, June 1991.

Table 3-6. Cation exchange capacity of RWMC soil.

Particle size (mm)	Cation exchange capacity[a] (milliequivalent/100 grams)	
	Ashed	Unashed
0.6-1	17.7	17.2
0.3-0.6	13.9	15.5
0.15-0.3	15.0	16.0
0.075-0.15	13.3	15.0
-0.075	13.3	13.3
Unclassified	11.6	15.0

a. Sample (one ten gallon drum, 35 kg) collected from the Lost River Spreading Area A adjacent to the RWMC which is commonly used as a source of soil fill for the RWMC. Portion of sample <1 mm blended (44.5% <1 mm), EGG-WTD-9749, June 1991.

Table 3-7. Mineral content of RWMC soil.

Typical breakdown:	37 wt% quartz, 48 wt% clay minerals, 10 wt% calcite, and 5 wt% minor constituents.					
	Wt% of species[a]					
Mineral species	Unclassified	1-0.6 mm	0.6-0.3 mm	0.3-0.15 mm	0.15-.075 mm	-0.075 mm
Quartz	37.46	35.98	34.67	34.68	39.24	37.77
Ill/Mont-Random	25.77	23.08	28.22	26.26	25.04	27.09
Fe-Illite/Nontronite	10.71	13.76	14.12	11.88	9.08	9.59
Calcite	9.92	10.34	9.68	10.07	8.86	10.50
Illite	8.35	4.70	6.37	7.16	6.70	8.94
Chlorite-Mg	3.33	4.57	2.41	4.49	4.54	3.31
Rutile	0.74	0.78	0.76	0.81	0.66	0.70
Andesine	1.33	4.64	2.41	0	0	0
Hydrous Phosphate	0.37	0.40	0.38	0.43	0.34	0.39
Microcline	1.98	1.79	0.94	1.15	2.85	1.42
Oligoclase	0	0	0	3.16	2.63	0.24

a. Sample (one ten gallon drum, 35 kg) collected from the Lost River Spreading Area A adjacent to the RWMC which is commonly used as a source of soil fill for the RWMC. Mineral Content as a function of particle size for RWMC soil. Portion of sample <1 mm blended (44.5% < 1 mm), EGG-WTD-9749, June 1991.

Table 3-8. Chemical composition of RWMC soil.

Typical composition: SiO_2 64.0 wt%, Al_2O_3 11.0 wt%, Fe_2O_3 4.0 wt%, FeO 0.7 wt% , CaO 7.0 wt%, K_2O 2.0 wt%, MgO 2.0 wt%, Organic 0.5 wt%, TiO_2 0.7 wt%, Na_2O 0.3 wt%.

	Wt% of compound[a]					
Compound	Unclassified	1-0.6 mm	0.6-0.3 mm	0.3-0.15 mm	0.15-.075 mm	-0.075 mm
SiO_2	64.81	63.57	64.20	63.17	66.37	64.92
Al_2O_3	11.15	11.09	11.46	11.67	10.91	11.05
Fe_2O_3	3.70	3.97	3.78	3.85	3.17	3.40
CaO	6.84	7.22	6.87	7.00	6.09	7.13
K_2O	2.26	2.21	2.14	2.24	2.25	2.20
MgO	2.14	2.41	2.13	2.46	2.39	2.20
H_2O^-	3.50	3.28	4.90	5.29	4.12	5.05
H_2O^+	2.51	2.51	2.54	2.64	2.48	2.52
CO_2	4.36	4.54	4.25	4.42	3.90	4.61
TiO_2	0.735	0.780	0.756	0.805	0.657	0.699
FeO	0.698	0.738	0.806	0.810	0.798	0.753
FeS_2	0.019	0.019	0.019	0.019	0.019	0.019
Na_2O	0.252	0.423	0.454	0.382	0.409	0.205
BaO	0.094	0.093	0.088	0.094	0.092	0.089
P_2O_5	0.192	0.206	0.198	0.222	0.179	0.202
Organic	0.54	0.56	0.76	0.87	0.64	0.68

a. Sample (one ten gallon drum, 35 kg) collected from the Lost River Spreading Area A adjacent to the RWMC which is commonly used as a source of soil fill for the RWMC. Chemical composition as a function of particle size for RWMC soil. Portion of sample <1 mm blended (44.5% <1 mm), EGG-WTD-9749, June 1991.

Table 3-9. Particle size distribution and mean density of Rocky Flats Plant soil.[a]

Particle size distribution of as received RFP soil

Particle size (mm)	Wt%	Cumulative Wt%
-0.075	5.2	5.2
0.075-0.15	16.3	21.5
0.15-0.3	18.7	40.2
0.3-0.6	16.8	57.0
0.6-1	7.5	64.5
1-2.36	6.9	71.4
2.36-37.5	28.6	100

Particle size and density distribution of RFP soil. Portion <1 mm blended (64.5% <1mm)

Particle size (mm)	Wt%	Cumulative Wt%	Mean density (g/cm^3)
-0.075	8.0	8.0	2.51
0.075-0.15	25.2	33.2	2.47
0.15-0.3	28.9	62.1	2.41
0.3-0.6	26.1	88.3	2.54
0.6-1	11.7	100	2.63
		Mass fraction ave density	2.49

a. Sample (18 one gallon cans) collected about 150 yards southeast of 903 Pad, EGG-WTD-9749, June 1991.

Table 3-10. Cation exchange capacity of RFP soil.

Particle size (mm)	Cation exchange capacity[a] (milliequivalent/100 grams)	
	Ashed	Unashed
0.6-1	5.5	9.4
0.3-0.6	7.8	32.7
0.15-0.3	15.5	37.7
0.075-0.15	16.1	35.5
-0.075	12.8	27.2
Unclassified	13.3	34.4

a. Sample (18 one gallon cans) collected about 150 yards southeast of 903 Pad. Portion of sample <1 mm blended (64.5% < 1 mm) EGG-WTD-9749, June 1991.

Table 3-11. Mineral content of Rocky Flats Plant soil.

Typical breakdown:	47 wt% quartz, 38 wt% clay minerals, 13 wt% feldspars, and 2 wt% minor constituents.					
	Wt% of species[a]					
Mineral species	Unclassified	1-0.6 mm	0.6-0.3 mm	0.3-0.15 mm	0.15-.075 mm	-0.075 mm
Quartz	47.23	68.51	48.48	41.70	39.07	39.86
Illite-Ca	20.76	13.99	16.57	17.77	20.88	20.84
Microcline	7.68	6.12	11.36	4.42	4.00	1.21
Ill/Mont-Random	12.45	9.09	9.94	25.39	18.79	18.76
Chlorite-Fe	4.23	0.46	1.68	0.23	2.34	1.96
Labradorite	4.92	0	5.64	3.86	0	0
Fe-Illite/Nontronite	0.04	0	4.97	2.38	3.51	4.20
Andesine	0	0.68	0	0	7.98	10.32
Rutile	0.56	0.26	0.45	0.62	0.68	0.70
Calcite	0.42	0.60	0.38	0.11	0	0
Hydrous Phosphate	0	0.26	0	0	0.46	0.46
Pyrite	0.09	0.02	0.02	0	0.11	0.09
Apatite	0.40	0	0.43	0.50	0	0
Pyroxene	1.04	0	0	1.71	1.43	0.95
Mg-Siderite (Mg 15)	0	0	0	1.01	0	0
Dolomite	0	0	0	0	0.49	0.53

a. Sample (18 one gallon cans) collected about 150 yards southeast of 903 Pad. Mineral content as a function of particle size for RFP soil. Portion of sample <1 mm blended (64.5% < 1mm), EGG-WTD-9749, June 1991.

Table 3-12. Chemical composition of Rocky Flats Plant soil.

Typical composition: SiO_2 75.0 wt%, Al_2O_3 11.0 wt%, Fe_2O_3 2.0 wt%, FeO 2.0 wt%, CaO 2.0 wt%, K_2O 3.0 wt%, MgO 1.7 wt%, Organic 6.0 wt%, TiO_2 0.7 wt%, Na_2O 0.5 wt%.

	Wt% of compound[a]					
Compound	Unclassified	1-0.6 mm	0.6-0.3 mm	0.3-0.15 mm	0.15-.075 mm	-0.075 mm
SiO_2	74.14	85.00	76.15	72.24	70.69	70.88
Al_2O_3	11.29	6.78	10.83	12.40	13.02	12.97
Fe_2O_3	1.90	1.32	2.49	2.78	2.90	3.01
FeO	1.87	0.63	0.79	1.58	1.71	1.61
CaO	1.90	0.99	1.76	2.10	2.10	2.03
K_2O	3.16	2.32	3.37	3.30	3.20	3.17
MgO	1.78	0.64	1.35	1.60	1.83	1.73
H_2O^-	12.83	5.29	9.54	17.23	12.79	12.11
H_2O^+	2.05	1.12	1.68	2.15	2.25	2.22
CO_2	0.19	0.30	0.17	0.54	0.40	0.27
TiO_2	0.654	0.758	0.452	0.615	0.677	0.698
FeS_2	0.094	0.019	0.019	0.019	0.112	0.094
Na_2O	0.467	0.224	0.686	0.438	0.741	0.811
BaO	0.066	0.044	0.066	0.072	0.071	0.069
P_2O_5	0.204	0.133	0.184	0.217	0.239	0.238
Organic	5.87	3.50	5.83	10.55	6.32	5.50

a. Sample (18 one gallon cans) collected about 150 yards southeast of 903 Pad. Chemical composition as a function of particle size for RFP soil. Portion of sample <1 mm blended (64.5% < 1 mm), EGG-WTD-9749, June 1991.

3.1 References

3-1. Radioactive Waste Technical Support Program, *Department of Energy Waste Treatability Group Guidance*, DOE/LLW-217, Rev. 0, January 1995.

3-2. J. H. Lee, G. P. Martins, J. R. Weidner, *Characterization Studies on: a) Contaminated Batch of Rocky Flats Soil, b) Uncontaminated Batch of INEL Soil*, EG&G-WTD-9749, June 1991.

THE CONTENTS OF THIS SECTION ARE
THE HIGHEST QUALITY AVAILABLE

INITIAL MD DATE 10/08/2001

4. WASTE RADIOLOGICAL CHARACTERIZATION

This section provides information on the radiological contaminants present in the wastes. Radionuclide inventories are provided for all radionuclides believed present. Source term information for alpha, beta, photon, and neutron emissions in the wastes are also presented. Considerable information describing the derivation of these source terms has been provided as background in order to help provide some implicit perspective on the uncertainties present.

The radiological description of the alpha-contaminated waste stored at the INEL presented herein has been prepared utilizing existing waste management database information records, analytical studies, and process knowledge review. The INEL databases include the Transuranic Waste Database (TWDB), which gives radiological information for the two estimated primary radionuclides at the container level, and the Radioactive Waste Management Information System (RWMIS), which gives radiological information at the shipment level. In addition, files containing actual SWEPP raw neutron assay instrument data were analyzed for additional information.

Table 4-1 presents a radionuclide summary for the INEL alpha-contaminated waste stored at the TSA. This table presents best estimates of radionuclide inventory as derived from the above information sources.

The waste stored at the TSA includes primarily alpha-emitting radionuclides; however, some beta gamma emitting radionuclides are included. Most all waste is contact-handleable, although some small quantities of waste are known to be remote-handled (using the definition of greater than two hundred millirems per hour at contact (>200 mrem/hr). Also some waste containers labeled and carried on inventory records as contact-handled are suspected to be remote handled. Table 4-2 summarizes the known remote handled waste. Tables 4-3 and 4-4 summarize suspect remote handled waste contained in the ALLW and TRUW categories.

4.1 Radiological Information Derived Primarily from Rocky Flats Plant Waste via the INEL Transuranic Waste Database Analysis

The design of a treatment facility for the processing of transuranic-contaminated waste forms must include provisions to assure environmental protection against radiological hazards to personnel. Such design considerations are dependent upon the proper characterization of the photon, electron, alpha, and neutron source terms associated with the transuranic (TRU) and/or non-transuranic (non-TRU) source material entrained within the waste matrices. The Transuranic Waste Database (TWDB) contains records at the container level; however, it does not contain information on the total inventory in storage and only reports radionuclide information for the two primary nuclides. The TWDB database information was analyzed[a] for select radionuclides at 15 years post purification[b] to produce a data set for nuclide mass, and TRU and non-TRU alpha activity information. This data set correlated to approximately two thirds of the total estimated

---

a. J. Frasure, and M. L. Apel, *Radionuclide and Alpha Activity Concentration Data for the INEL Stored Waste Reported in the Transuranic Waste Database (TWDB)*, RWMC EDF-716, March 4, 1994.

b. G. K. Becker, *(RWMC EDF 629—Rev. 1), Alpha Activity Distribution Due to Selected TRU and non-TRU Source Materials at 15 Years Post Purification Date*, RWMC EDF-690, December 2, 1993.

Table 4-1. Radionuclide summary for INEL TSA stored waste.

				Estimated Activity By Information Source							
Radionuclide / Mixture	TRU (Y/N)	Radiation Type, Decay (Primary, Secondary)	Half-Life	RWMIS Derived (At Disposal) (Ci)a	RWMIS Derived (Decayed to '93) (Ci)a	TWDB Derived (15 year decay) (alpha Ci)b	Activity Best Estimate (Ci)c,d	Specific Activity (Ci/g)	Notes	Estimated Mass (kg)e	Activity best estimate information source
227Ac	N	beta, gamma	21.77 yr	7.2900e-02	4.0790e-02	-	4.08e-02	7.20E+01		5.67E-07	Note a. RWMIS analysis
241Am	Y	alpha, gamma	432.7 yr	8.7910e+04	8.9780e+04	1.21e+05	1.22e+05	3.20E+00		3.81E+01	Note b. TWDB AM-241+WG PU Am241
242mAm	Y	beta, gamma	141 yr	3.0740e-04	3.0010e-04	-	3.00e-04	9.83E+00		3.05E-08	Note a. RWMIS analysis
243Am	Y	alpha, gamma	7.37E3 yr	3.8020e-01	3.7990e-01	5.99e-03	3.80e-01	1.90E-01		2.00E-03	Note a. RWMIS analysis
137mBa	N	gamma	2.552 m	9.7330e+01	2.2460e+03	-	2.25e+03	0.00E+00	Note i	0.00E+00	Note a. RWMIS analysis
212Bi	N	beta	7.0 m	0.0000e+00	2.6550e+01	-	2.66e+01	1.50E+07		1.77E-09	Note a. RWMIS analysis
214Bi	N	beta, gamma	19.9 m	4.8000e-02	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
249Bk	N	beta, alpha	3.2E2 d	2.1400e-01	5.7090e-04	-	5.71e-04	1.80E+03		3.17E-10	Note a. RWMIS analysis
14C	N	beta	5730 yr	4.2300e-05	4.2250e-05	-	2.38e+00	4.60E+00		5.17E-04	EDF PSPI-015546-08, 10/12/95
144Ce	N	beta, gamma	284.6 d	3.8990e+03	2.7060e+01	-	2.71e+01	3.20E+03		8.46E-06	Note a. RWMIS analysis
249Cf	Y	alpha, gamma	351 yr	9.8900e-03	9.7290e-03	-	9.73e-03	3.10E+00		3.14E-06	Note a. RWMIS analysis
252Cf	N	alpha, neutron, gamma	2.638 yr	6.4860e-02	4.0770e-03	4.62e-04	4.08e-03	6.50E+02		6.28E-09	Note a. RWMIS analysis
242Cm	N	alpha, gamma	162.8 d	3.3210e+00	1.4360e-06	-	1.44e-06	3.30E+03		4.35E-13	Note a. RWMIS analysis
243Cm	Y	alpha, gamma	29.1 yr	1.7210e-02	1.5310e-02	-	1.53e-02	4.20E+01		3.65E-07	Note a. RWMIS analysis
244Cm	N	alpha, gamma	18.1 yr	1.1320e+03	5.3900e+02	-	5.39e+02	8.20E+01		6.57E-03	Note a. RWMIS analysis
246Cm	Y	alpha, gamma	4.76E3 yr	1.5330e-03	1.5300e-03	-	1.53e-03	3.60E-01		4.25E-06	Note a. RWMIS analysis
248Cm	Y	alpha	3.48E5 yr	4.1700e-08	4.1700e-08	-	4.17e-08	4.30E-03		9.70E-09	Note a. RWMIS analysis
58Co	N	gamma	9.1 hr/70.88 d	1.1330e+02	1.1010e-07	-	1.10e-07	3.10E+04		3.55E-15	Note a. RWMIS analysis
60Co	N	beta, gamma	10.47m/5.27yr	2.3260e+02	9.4300e+01	-	1.00e+02	1.10E+03		9.09E-05	Note a. RWMIS analysis Co-60+MAP+EDF PSPI-015546-08, 10/12/95
51Cr	N	gamma	27.7 d	8.4600e+00	0.0000e+00	-	0.00e+00	9.20E+04		0.00E+00	Note a. RWMIS analysis
134Cs	N	beta, gamma	2.91 hr/2.065 yr	9.2960e+02	1.1070e+02	-	1.11e+02	1.20E+03		9.23E-05	Note a. RWMIS analysis
137Cs	N	beta, gamma	30.17 yr	2.3660e+03	2.0030e+03	-	2.26e+03	9.80E+01		2.30E-02	Note a. RWMIS analysis Cs137+(0.5xMFP)+Unidentified b/g
150Eu	N	beta, gamma	12.8 hr/36 yr	4.5000e-05	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
152Eu	N	gamma, beta	1.6 hr/13.48 yr	1.7120e-01	6.7560e-02	-	6.76e-02	1.90E+02		3.56E-07	Note a. RWMIS analysis
154Eu	N	gamma	46.1 m/8.59 yr	1.5550e+00	7.1040e-01	-	7.10e-01	1.50E+02		4.74E-06	Note a. RWMIS analysis
155Eu	N	beta, gamma	4.71 yr	7.7750e-01	1.8630e-01	-	1.86e-01	1.40E+03		1.33E-07	Note a. RWMIS analysis
55Fe	N	electron capture	2.73 yr	3.8590e+00	1.1320e+00	-	1.13e+00	2.20E+03		5.15E-07	Note a. RWMIS analysis
59Fe	N	beta, gamma	44.51 d	5.3400e+00	0.0000e+00	-	0.00e+00	4.90E+04		0.00E+00	Note a. RWMIS analysis
3H	N	beta	12.3 yr	1.9500e+00	7.9780e-01	-	2.64e+02	9.76E+03		2.70E-05	Note a. RWMIS analysis + EDF PSPI-015546-08, 10/12/95
129I	N	beta, gamma	1.57E7 yr	-	0.0000e+00	-	1.83e-04	1.60E-04		1.14E-03	EDF PSPI-015546-08, 10/12/95
85Kr	N	beta, gamma	4.448 hr/ 10.73 yr	9.3620e+00	6.8570e+00	-	6.86e+00	4.00E+02		1.71E-05	Note a. RWMIS analysis
MAP	N	(beta, gamma)	10.47 m/ 5.27 yr	5.7550e+00	1.2800e+00	-	0.00e+00	0	Note f, i	0.00E+00	
MFP	N	(beta, gamma)	30 yr	6.2980e+02	4.8330e+02	-	0.00e+00	0	Note g, i	0.00E+00	
54Mn	N	gamma	312.2 d	1.1550e+02	2.2870e-01	-	2.29e-01	8.30E+03		2.76E-08	Note a. RWMIS analysis
95Nb	N	beta, gamma	3.61 d/34.97 d	7.2000e-01	0.0000e+00	-	0.00e+00	3.90E+04		0.00E+00	Note a. RWMIS analysis
59Ni	N	electron capture	7.6E4 yr	-	0.0000e+00	-	0.00e+00	8.10E-02	Note d	0.00E+00	
63Ni	N	beta	100 yr 7.6E4 yr	3.6940e+00	3.5720e+00	-	3.57e+00	4.60E+01		7.77E-05	Note a. RWMIS analysis
237Np	Y	alpha, gamma	2.1E6 yr	3.5520e-01	3.5520e-01	1.94e-01	3.55e-01	6.90E-04		5.15E-01	Note a. RWMIS analysis
233Pa	N	beta, gamma	27 d	1.9730e-03	0.0000e+00	-	0.00e+00	2.10E+04		0.00E+00	Note a. RWMIS analysis
234Pa	N	beta, gamma	1.17m/6.69hr	-	0.0000e+00	-	0.00e+00	0	Note d, i	0.00E+00	
210Pb	N	beta, gamma	22.3 yr	2.1000e-02	1.7560e-02	-	1.76e-02	8.80E+01		2.00E-07	Note a. RWMIS analysis
212Pb	N	beta, gamma	10.64 hr	0.0000e+00	2.6550e+01	-	2.66e+01	1.40E+06		1.90E-08	Note a. RWMIS analysis
214Pb	N	beta, gamma	27 m	4.8000e-02	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
147Pm	N	beta, gamma	2.6234 yr	5.4810e+02	2.7260e+01	-	2.73e+01	9.40E+02		2.90E-05	Note a. RWMIS analysis
212Po	N	alpha, gamma	45 s	0.0000e+00	1.7010e+01	-	1.70e+01	0	Note i	0.00E+00	Note a. RWMIS analysis
214Po	N	alpha, gamma	163.7 s	4.8000e-02	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
216Po	N	alpha, gamma	0.145 s	0.0000e+00	2.6550e+01	-	2.66e+01	0	Note i	0.00E+00	Note a. RWMIS analysis
218Po	N	alpha, gamma	3.10 m	4.8000e-02	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
144Pr	N	beta, gamma	7.2 m/17.28 m	1.5640e+01	2.7180e+01	-	2.72e+01	0	Note i	0.00E+00	Note a. RWMIS analysis
236Pu	N	alpha, gamma	2.87 yr	5.7640e-02	1.4790e-02	-	1.48e-02	5.37E+02		2.75E-08	Note a. RWMIS analysis

Table 4-1. (continued).

Radionuclide / Mixture	TRU (Y/N)	Radiation Type, Decay (Primary, Secondary)	Half-Life	Estimated Activity By Information Source: RWMIS Derived (At Disposal) (Ci)a	RWMIS Derived (Decayed to '93) (Ci)a	TWDB Derived (15 year decay) (alpha Ci)b	Activity Best Estimate (Ci)c,d	Specific Activity (Ci/g)	Notes	Estimated Mass (kg)e	Activity best estimate information source
238Pu	Y	alpha, gamma	87.7 yr	6.7590e+04	6.0800e+04	1.12e+05	1.16e+05	1.70E+01		6.80E+00	Note b. TWDB analysis Pu 238 + WGPu+HSPu
239Pu	Y	alpha, gamma	2.41E4 yr	4.0160e+04	4.0150e+04	3.86e+03	6.87e+04	6.20E-02		1.11E+03	Note b. TWDB analysis Pu 239 + WGPu+HSPu
240Pu	Y	alpha, gamma	6.56E3 yr	9.8370e+03	9.8250e+03	1.18e+03	1.59e+04	2.30E-01		6.90E+01	Note b. TWDB analysis Pu 240 + WGPu+HSPu
241Pu	N	beta, alpha, gamma	14.4 yr	2.8160e+05	1.6110e+05	4.19e+00	1.61e+05	1.04E+02		1.55E+00	Note a. RWMIS analysis, beta emitter
242Pu	Y	alpha, gamma	3.75E5 yr	9.4510e-01	9.4510e-01	1.45e-01	1.04e+00	3.90E-03		2.67E-01	Note b. TWDB analysis Pu 242 + WGPu+HSPu
224Ra	N	alpha, gamma	3.66 d	0.0000e+00	2.6550e+01	-	2.66e+01	1.60E+05		1.66E-07	Note a. RWMIS analysis
226Ra	N	alpha, gamma	1.6E3 yr	4.8020e-02	4.7900e-02	1.09e-01	1.09e-01	1.00E+00		1.09E-04	Note b. TWDB analysis
228Ra	N	beta, gamma	5.76 yr	2.7500e-01	3.0620e-02	-	3.06e-02	2.30E+02		1.33E-07	Note a. RWMIS analysis
106Rh	N	beta, gamma	2.18h/ 29.9s	1.3000e+00	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
220Rn	N	alpha, gamma	55.6 s	0.0000e+00	2.6550e+01	-	2.66e+01	0	Note i	0.00E+00	Note a. RWMIS analysis
222Rn	N	alpha, gamma	3.8235 d	4.8000e-02	0.0000e+00	-	0.00e+00	1.50E+05		0.00E+00	Note a. RWMIS analysis
106Ru	N	beta	1.020 yr	1.0620e+02	1.8650e-01	-	1.87e-01	3.40E+03		5.49E-08	Note a. RWMIS analysis
125Sb	N	beta, gamma	2.758 yr	6.0870e+00	1.6470e+00	-	1.65e+00	1.40E+03		1.18E-06	Note a. RWMIS analysis
90Sr	N	beta	29.1 yr	2.1160e+03	1.7780e+03	-	2.02e+03	1.50E+02		1.35E-02	Note a. RWMIS analysis + (0.5xMFP)
182Ta	N	gamma	15.8 m/114.43 d	7.3500e-01	1.5480e-05	-	1.55e-05	6.20E+03		2.50E-12	Note a. RWMIS analysis
99Tc	N	gamma, beta	6.01 hr/2.13E5 yr	1.7600e-03	1.7600e-03	-	5.37e-01	1.70E-02		3.16E-02	Note a. RWMIS analysis + EDF PSPI-015546-08, 10/12/95
228Th	N	alpha, gamma	1.913 yr	0.0000e+00	2.6550e+01	-	2.66e+01	8.30E+02		3.20E-05	Note a. RWMIS analysis
229Th	N	alpha, gamma	7.3E3 yr	-	0.0000e+00	-	0.00e+00	0	Note d, i	0.00E+00	
230Th	N	alpha, gamma	7.54E4 yr	1.9980e-02	1.9980e-02	-	2.00e-02	1.90E-02		1.05E-03	Note a. RWMIS analysis
232Th	N	alpha, gamma	1.4E10 yr	3.3010e-01	3.3010e-01	7.31e+00	7.31e+00	1.10E-07		6.65E+04	Note b. TWDB analysis
234Th	N	beta, gamma	24.10 d	9.2800e-05	0.0000e+00	-	0.00e+00	2.30E+04		0.00E+00	Note a. RWMIS analysis
208Tl	N	beta, gamma	3.053 m	0.0000e+00	9.5400e+00	-	9.54e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
228U	N	alpha, gamma	9.1 m	1.0700e-04	0.0000e+00	-	0.00e+00	0	Note i	0.00E+00	Note a. RWMIS analysis
232U	N	alpha, gamma	70 yr	3.0020e+01	2.6040e+01	-	2.60e+01	2.10E+01		1.24E-03	Note a. RWMIS analysis
233U	N	alpha, gamma	1.592E5 yr	8.9860e+02	8.9850e+02	1.02e+03	1.02e+03	9.50E-03		1.07E+02	Note b. TWDB analysis
234U	N	alpha, gamma	2.46E5 yr	3.3590e+00	5.7780e+00	-	5.78e+00	6.20E-03		9.32E-01	Note a. RWMIS analysis
235U	N	alpha, gamma	7.04E8 yr	6.6690e-02	6.6690e-02	8.61e-02	8.61e-02	2.10E-06		4.10E+01	Note b. TWDB analysis
236U	N	alpha, gamma	2.342E7 yr	1.1990e-03	1.1990e-03	-	1.20e-03	6.30E-05		1.90E-02	Note a. RWMIS analysis
238U	N	alpha, gamma	4.47E9 yr	1.1710e-01	1.1710e-01	1.47e-01	1.47e-01	3.30E-07		4.45E+02	Note b. TWDB analysis
Unidentified b/g	N	(beta, gamma)	30.17 yr	1.4890e+01	1.2440e+01	-	0.00e+00	0.00E+00	Note h	0.00E+00	
90Y	N	gamma, beta	3.19 hr/2.67 d	1.0180e+02	2.0190e+03	-	2.02e+03	2.50E+05		8.08E-06	Note a. RWMIS analysis
65Zn	N	gamma, beta	243.8 d	1.1000e-03	1.8680e-08	-	1.87e-08	8.00E+03		2.34E-15	Note a. RWMIS analysis
95Zr	N	beta, gamma	64.02 d	6.7230e+01	2.3400e-09	-	2.34e-09	2.10E+04		1.11E-16	Note a. RWMIS analysis
					3.7216e+05		4.942e+05			6.827E+04	
WG Pu Mixture	Y	alpha, gamma		-	-	8.89e+04	-				Note b. TWDB analysis
[238Pu]		alpha, gamma	87.7 yr	-	-	[2.0287e+03]	-		Note j		
[239Pu]		alpha, gamma	2.41E4 yr	-	-	[6.4839e+04[	-		Note j		
[240Pu]		alpha, gamma	6.563E3 yr	-	-	[1.4700e+04]	-		Note j		
[241Pu]		beta, alpha, gamma	14.4 yr	-	-	[6.5866e+03]	-		Note j		
[242Pu]		alpha, gamma	3.75E5 yr	-	-	[8.8900e-01]	-		Note j		
[241Am Impurity plus grow in]		alpha, gamma		-	-	[7.4676e+02]	-		Note j		
HS Pu Mixture	Y	alpha, gamma		-	-	1.65e+03	-				Note b. TWDB analysis
[236Pu]		alpha, gamma	2.87 yr	-	-	[1.2600e-02]	-		Note j		
[238Pu]		alpha, gamma	87.7 yr	-	-	[1.6474e+03]	-		Note j		
[239Pu]		alpha, gamma	2.41E4 yr	-	-	[1.1265e+00]	-		Note j		
[240Pu]		alpha, gamma	6.563E3 yr	-	-	[5.8806e-01]	-		Note j		

Table 4-1. (continued).

Estimated Activity By Information Source

Radionuclide / Mixture	TRU (Y/N)	Radiation Type, Decay (Primary, Secondary)	Half-Life	RWMIS Derived (At Disposal) (Ci)a	RWMIS Derived (Decayed to '93) (Ci)a	TWDB Derived (15 year decay) (alpha Ci)b	Activity Best Estimate (Ci)c,d	Specific Activity (Ci/g)	Notes	Estimated Mass (kg)e	Activity best estimate information source
[241Pu]		beta, alpha, gamma	14.4 yr	-	-	[2.7679e-07]	-		Note j		
[242Pu]		alpha, gamma	3.75E5 yr	-	-	[5.0940e-04]	-		Note j		
			Subtotals	5.01e+05 Ci	3.72e+05 Ci	3.30e+05 Ci	4.94e+05 Ci			6.83E+04 kg	

NOTES:

a. Estimated summary information for TSA stored alpha contaminated (CH ALLW + TRUW) waste from analysis of the Radioactive Waste Management Database (RWMIS) information which reports radionuclide information via shipments received, nuclides decayed to the 2 curie daughter level,, includes estimated 8400 curies for 75 m3 remote handled waste in the TSA-ILTSF. Atwood C. L.,M.J. Schlafman, Emperical Distributions of Radionuclides from RWMIS Data, EGG-RAAM-10741, April 1993.

b. B. D. Raivo, TSA (aLLW and TRUW) Waste Radiological Rollup Tables, EDF PSPI-015546-05 rev0, March 21, 1995, plus supporting TWDB analysis EDFs.

c. Best estimate from review and analysis of all non-classified information sources including databases, reports, letters, and other sources. EDF PSPI-015546-12, November 30, 1995.

d. Decay daughter radionuclide activity generally included in parent activity, identification of individual nuclides may be included in list for completeness.

e. Best estimate of nuclide mass derived from best estimate of activity.

f. Mixed Activated Products (MAP) treated as 60Co.

g. Mixed Fission Products (MFP) treated as a mixture of half Cs-137 and half Sr-90.

h. Unidentified beta/gamma emitters treated as Cs-137.

i. The Specific Activity was not available for this Radionuclide.

j. G K. Becker, B. D. Raivo, TSA Waste Alpha Activity Derivation at 15 Year Post Purification, EDF PSPI 015546-10, November 16, 1995.

Table 4-2. Known remote handled waste in the ILTSF.[a]

Category	Volume (m^3)	Activity[a] (Ci)
TRU	—	100
Non-TRU	—	8388
Total	75	8489

a. 1994 National Integrated Database Report (IDB) and as derived from RWMIS analysis, EGG-RAAM-10741, April 1993.

Table 4-3. TSA alpha low-level waste suspect as having some portion being remote handled.[a]

Wastestream ID	Portion suspect as remote handled (m^3)
Alpha Low-Level Waste in TSA	
ID-AEO-104	44.7
ID-ANL-161	0.4
ID-BTO-030	0.4
ID-INL-150	0.3
ID-INL-153N	5.9
ID-RFO-000	1.4
ID-RFO-001	1.1
ID-RFO-002	6.8
ID-RFO-241	21.8
ID-RFO-320	2.9
ID-RFO-330	89.8
ID-RFO-335	0.8
ID-RFO-336	138.3
ID-RFO-337	3.4
ID-RFO-339	0.5
ID-RFO-432	0.4
ID-RFO-440	1.9
ID-RFO-441	1.6
ID-RFO-442	1.4
ID-RFO-463	0.1
ID-RFO-480	32.8
ID-RFO-481	2.0
ID-RFO-9999	150.4
ID-TRA-154N	0.2
Subtotal	509.4

a. As derived from INEL FFCA reporting efforts for waste treatment, EDF PSPI-015546-15, 12/15/95.

Table 4-4. TSA transuranic waste suspect as having some portion being remote handled.[a]

Wastestream ID	Portion suspect as remote handled (m^3)
Transuranic waste in TSA	
CH-ANL-180T[b]	13.6
CH-ANL-182T[b]	0.3
CH-ANL-503T[b]	0.9
CH-ANL-538[b,c]	6.2
ID-AEO-104T	58.8
ID-AEO-107T	6.4
ID-ANL-160T	0.2
ID-BTO-012TN	0.2
ID-BTO-015TN	0.6
ID-BTO-030T	9.5
ID-BTO-040T	15.6
ID-BTO-081TN	3.6
ID-CPP-151T	0.4
ID-CPP-172	27.9
ID-INL-142T	12.1
ID-INL-152TN	2.0
ID-INL-153TN	1.9
ID-INL-157T	0.4
ID-RFO-000T	1.7
ID-RFO-001T	40.2
ID-RFO-002T	20.7
ID-RFO-241T	1.0
ID-RFO-320T	7.5
ID-RFO-330T	52.5
ID-RFO-335T	1.3
ID-RFO-336T	56.4
ID-RFO-337T	1.2
ID-RFO-339T	11.8
ID-RFO-391TN	0.4
ID-RFO-392TN	0.1
ID-RFO-432T	2.1
ID-RFO-440T	3.3
ID-RFO-441T	1.4
ID-RFO-442T	1.0
ID-RFO-463T	0.8
ID-RFO-480T	16.8
ID-RFO-481T	5.9
ID-RFO-9999T	204.8
ID-TAN-200T	0.2
ID-TRA-154TN	1.9
ID-TRA-291T	2.1
Subtotal	595.9

a. As derived from INEL FFCA reporting efforts for waste treatment, EDF PSPI-015546-15, 12/15/95.
b. Non-TSA wastestreams stored at Argonne National Laboratory-West.
c. Entire wastestream volume identified for transfer to WIPP per site treatment plans.

mass in storage. Extrapolations and rollup summaries[c] of this data set were performed to provide estimations which correlated to the total estimate mass in storage. Additionally, the data set was summarized for alpha activity concentration distribution[d] to provide an estimate of the distribution within the data set and the inventory in storage. Source term data (per gram of radionuclide) for photons (gamma spectrum) and electrons due to selected TRU and non-TRU radionuclides associated with the stored waste was also compiled[e] as an aid to facility shielding design and personnel protection.

In addition, actual raw instrument data from SWEPP Passive-Active Neutron assay characterization of approximately 12,000 drums[f] were analyzed[g] for neutron source term information.

This source term data is developed and illustrated for retrievably-stored INEL waste containers generated as a byproduct of operations at the Rocky Flats Plant (RFP). Such data are applicable to the majority of the retrievably-stored waste container population since the RFP fraction constitutes approximately 90–95% by volume. The balance of the retrievably-stored waste container population is from generators such as Mound Laboratory, Battelle Columbus Laboratories, and the Bettis Atomic Power Laboratory. Source term data associated with these generators are briefly addressed in this document. Due to the present unavailability of precise process source composition data for the non-RFP wastes, data for these wastes are not as complete as the RFP source characterization data. Nevertheless, the data provided in this report can be used to support initial waste treatment considerations. It should be recognized, however, that the source characteristics associated with the non-RFP wastes need to be satisfactorily established and evaluated prior to processing.

The Rocky Flats Plant alpha, electron, and photon source term data is prepared from established nuclear constants and related databases. To provide for consistency in the derivation of alpha, electron, and photon source terms, the same fundamental assumptions are applied in all cases. These assumptions are as follows:

- Rocky Flats Plant source characteristics are due to the radionuclides and radionuclidic compounds as specified in Table 4-5
- Nominal isotopic composition of the two radionuclidic compounds specified in Table 4-5 is as per Table 4-6
- Source characterization data as specified account for and include the parent material and all progeny excluding radon isotopes at a 15-year post purification date

c. B. D. Raivo, *TSA Contact Handled (aLLW and TRUW) Waste Radiological Rollup Tables*, EDF PSPI-015546-05, March 21, 1995.

d. B. D. Raivo, *TSA Waste Alpha Activity Concentration Distribution*, EDF PSPI-015546-11, November 20, 1995.

e. G. K. Becker, *Low-Level Alpha Contaminated and Transuranic Waste Photon/Electron Source Term Data*, RWMC EDF-669, January 10, 1994.

f. L. V. East, *SWEPP Passive-Active Neutron Assay Database Description*, RWMC EDF-688, December 13, 1993.

g. L. V. East, *Neutron Source Terms for Rocky Flats-Generated Waste at the INEL*, RWMC EDF-694, January 7, 1994.

Table 4-5. Radionuclides and plutonium mixtures for which data are reported.[a,b]

^{252}Cf	^{239}Pu	^{238}U
^{243}Am	^{238}Pu	^{235}U
^{241}Am	^{236}Pu	^{233}U
^{242}Pu	^{237}Np	^{232}Th
^{241}Pu	WG Pu	^{230}Th
^{240}Pu	HS Pu	^{226}Ra

a. Transuranic Waste Database (TWDB), Idaho National Engineering Laboratory, Idaho Falls, ID, February 1994.

b. EDF RWMC-716, 3/4/94.

Table 4-6. Nominal isotopic composition of plutonium compounds.[a]

Isotopic composition of weapons-grade plutonium: WG Pu		Isotopic composition of heat-source plutonium: HS Pu	
Radionuclide	Mass fraction	Radionuclide	Mass fraction
^{238}Pu	1.2E-04	^{236}Pu	1.0E-06
^{239}Pu	9.38E-01	^{238}Pu	8.35E-01
^{240}Pu	5.82E-02	^{239}Pu	1.4E-01
^{241}Pu	3.4E-03	^{240}Pu	2.0E-02
^{242}Pu	2.4E-04	^{241}Pu	4.0E-03
^{241}Am impurity	200 µg/g WG Pu	^{242}Pu	1.0E-03

a. EDF RWMC-690, 12/2/93.

- 15 year decay/ingrowth time is a representative average waste age for the retrievably-stored waste at the RWMC
- Source self-absorption effects associated with the photon, electron, and alpha data are not accounted for; the specified source term data is simply the theoretical yield.

The RFP neutron source characterization data cannot be calculated directly from the use of nuclear data and a specified set of parent radionuclides or compounds. This is primarily due to the variation in neutron emission rate as a function of the chemical compound and configuration of the alpha-emitting radionuclides. In spite of this complication, it is possible to estimate bounds on the neutron emission rate source term based on measurements acquired at the SWEPP waste examination facility as a function of waste form, i.e., content code.

The source term data for alpha, electron, photon, and neutron radiations associated with the radionuclides and radionuclidic compounds of Table 4-5 are presented in the following four sections. Each section delineates the method of computation, the assumptions employed, and illustrates results as appropriate.

4.1.1 Alpha Data

The alpha source term is specifically defined as the alpha activity due to one gram of parent source material at 15 years post purification date. The computed 15-year decay date alpha activity includes the contribution from the parent radionuclide or compound and the activity associated with all alpha-emitting progeny, i.e., daughter, granddaughter, great granddaughter, etc., in the decay chain. For each parent radionuclide or compound, the alpha activity is categorized into two components defined as TRU and non-TRU. The TRU component consists of alpha-emitting radionuclides with an atomic number greater than 92 and a half-life greater than 20 years. The non-TRU components are those alpha-emitting radionuclide species with atomic numbers of 92 or less and/or half-lives of less than 20 years. The distinction between TRU and non-TRU in the context of Tables 4-7 and 4-8 is not to be confused with the concentration-based definition as per DOE Order 5820.2A.[4-1] The information provided in this section is based on work by Becker (1993),[h] Becker and Raivo (1995),[i] and Raivo (1995).[j]

The process of determining the TRU and non-TRU alpha activity distribution starts by establishing all of the members of the radioactive series decay chain for a given parent source material. Once the various radioactive species constituting a given decay chain have been established, the parent material is assigned an initial (time equals 0) mass of 1.0 gram. The decay computation is then performed which results in a mass value for the various members of the decay chain at 15 years from time zero. Decay half-lives and appropriate branching ratios utilized in the computation for each member of the series decay chain are obtained from Browne and Firestone.[4-2] The decay/ingrowth computational method employed in the analysis is based on a parameterized form of the Bateman equations.

Since the 15 year decay/ingrowth time is relatively short compared to the half-lives of most of the parents and decay chain members addressed in this evaluation, some species will have a minimal ingrowth mass at 15 years. No criteria is set for a minimum calculated mass under which a given chain member is neglected. This is because a radionuclide may have a large specific activity such that its contribution to the 15 year alpha activity is significant despite its seemingly small mass. Thus for the sake of completeness and data integrity, the decay chain is followed all the way to the stable element chain endpoints, typically 8 to 10 generations, to ensure that all alpha activity is accounted for.

Having established the individual masses of the various members of the decay chain at 15 years, it is a simple matter to obtain the alpha activity for the TRU and non-TRU chain members. The alpha activity for each chain member is determined by multiplying the calculated mass in grams by the specific activity (Ci/g) for that particular member to obtain alpha activity (Ci). The alpha-emitting progeny for the decay chain are then grouped into either TRU or non-TRU categories. The total alpha activity per gram of parent source material is then determined by summing all computed decay chain member alpha activities within the category of interest.

---

h. G. K. Becker, *(RWMC EDF 629—Rev. 1), Alpha Activity Distribution Due to Selected TRU and non-TRU Source Materials at 15 Years Post Purification Date*, RWMC EDF-690, December 2, 1993.

i. G. K. Becker, B. D. Raivo, *TSA Waste Alpha Activity Derivation at 15 Year Post Purification*, EDF PSPI-015546-10, November 16, 1995.

j. B. D. Raivo, *TSA Waste Alpha Activity Concentration Distribution*, EDF PSPI-015546-11, November 20, 1995.

Table 4-7. Alpha activity due to one gram of TRU parent source material at 15 years post purification.[a]

TRU source material	TRU[b] α activity (Ci)	Non-TRU[c] α activity (Ci)
^{252}Cf	3.694E-03	1.0274E+01
^{243}Am	1.991E-01	5.828E-13
^{241}Am	3.3466	6.00E-10
^{242}Pu	3.926E-03	9.286E-12
^{241}Pu	1.7392	1.2058E-03
^{240}Pu	2.266E-01	1.030E-07
^{239}Pu	6.201E-02	8.288E-10
^{238}Pu	1.5205E+01	7.339E-04
^{236}Pu	1.3853E+01	8.3254E+01
^{237}Np	7.05E-04	3.0206E-08
WG Pu	7.977E-02	4.1946E-06
HS Pu	1.27171E+01	6.948E-04

a. EDF RWMC-690, 12/2/93.

b. Alpha activity from radionuclides with atomic number greater than 92 and half-life greater than 20 years.

c. Alpha activity from radionuclides with atomic number 92 or less and/or half-lives of less than 20 years.

Table 4-8. Alpha activity due to one gram of non-TRU parent source material at 15 years post purification.[a]

Non-TRU source material	TRU[b] α activity (Ci)	Non-TRU[c] α activity (Ci)
^{238}U	—	3.36E-07
^{235}U	—	1.923E-06
^{233}U	—	9.68E-03
^{232}Th	—	2.779E-07
^{230}Th	—	2.009E-02
^{226}Ra	—	2.2426

a. EDF RWMC-690, 12/2/93.

b. Alpha activity from radionuclides with atomic number greater than 92 and half-life greater than 20 years.

c. Alpha activity from radionuclides with atomic number 92 or less and/or half-lives of less than 20 years.

For the case of the radionuclidic compounds, weapons-grade plutonium (WG Pu) and heat-source plutonium (HS Pu), the computation of the TRU and non-TRU alpha activities requires some additional accounting. For such compounds, the total alpha activity in the TRU and non-TRU categories is due to the contribution of each isotopic/radionuclidic component of the parent compound and all of its alpha-emitting progeny weighted by the appropriate parent compound mass fraction. The nominal mass fractions utilized in the computation for the WG Pu and HS Pu alpha activity determinations are shown in Table 4-6. The WG Pu computation also includes the ^{241}Am impurity present at the time zero purification date, which is nominally 200 micrograms ^{241}Am per gram of WG Pu. No impurities are identified for the HS Pu alpha activity calculations.

As indicated in the assumption set, the alpha activity due to the nuclide radon (Rn) is not included in any of the non-TRU alpha activity tabulations. The reasoning behind this exception is that while the waste is containerized it is considered sealed such that radon migration from the waste is nonexistent or minimal. Therefore all radon progeny will become a component of the source term as they are considered to have grown in and become trapped in the waste container over time. When the container is opened for treatment at some date, it is then assumed that the radon isotopes will quickly migrate from the waste matrix. To the extent that radon does migrate from containerized waste forms during storage, the radon progeny fraction of the source term will be conservative.

Table 4-7 contains the distribution between TRU and non-TRU alpha activity for parent source material comprised of the Table 4-5 TRU radionuclides. Also included in Table 4-7 are the TRU and non-TRU alpha activity components for the two radionuclide compounds, WG Pu and HS Pu. The values tabulated in Table 4-8 result from the determination of alpha activity for Table 4-5 parent source material consisting of non-TRU radionuclides only, i.e., alpha emitters with atomic numbers less than or equal to 92 and/or half-lives less than 20 years.

The weapons-grade plutonium (Pu-52) and heat-source plutonium (Pu-83) mixtures as called out in the database inventories require additional analysis to provide useful activity information. Tables 4-9 and 4-10 present nuclide alpha activity fraction at 15 year decay for the weapons grade and heat source plutonium mixtures.

Tables 4-11 through 4-17 present alpha activity per gram at 15 year decay for the nuclides presented in the Tables 4-9 and 4-10 mixture summaries, i.e., Pu-236, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, and Am-241 respectively.

The results of this TWDB analysis enable presentation of alpha activity both at detailed-content code level and at a summary level. The detailed information at the content code level for where information is available is presented in the Appendices A and B profile data. Table 4-18 provides a summary distribution by alpha concentration for the TSA waste in general. Alpha activity in Table 4-18 is presented by interval number, Table 4-19 provides the TRU alpha activity concentrations for the Table 4-18 intervals. Figure 4-1 presents TSA stored waste inventory distribution by alpha activity concentration interval number. Figure 4-2 presents TSA stored waste inventory distribution by alpha activity concentration.

Table 4-9. Plutonium mixture summary for weapons grade plutonium (WG Pu/Pu-52) waste.

WG Pu (Pu-52) composition[a]	Mass fraction at time 0[a]	Daughters	Radiation type, decay (primary, secondary)	Half-life	TRU (Y/N)	Alpha emitter (Y/N)	Total alpha activity of parent + daughters at 15 years per gram isotope (Ci)	Total alpha activity of parent + daughter at 15 years per g-WG-Pu[b] (alpha Ci/g)	Total alpha activity fraction at 15 year decay
^{238}Pu	1.2E-04		alpha, gamma	87.7 yr	Y	Y	(1.5204E+01)	0.00182	0.02282
		^{234}U	alpha, gamma	2.454E5yr	N	Y	(7.3393E-04)		
		^{230}Th	alpha, gamma	7.54E4 yr	N	Y	(4.9797E-08)		
		^{226}Ra	alpha, gamma	1600 yr	N	Y	(1.1067E-10)		
					subtotal alpha =		15.2058		
^{239}Pu	9.38E-01		alpha, gamma	2.41E4 yr	Y	Y	(0.06201)	0.05818	0.72935
		^{235}U	alpha, gamma	7.04E8 yr		Y	(8.288E-10)		
		others	-	-	-	-	-		
					subtotal alpha =		0.06201		
^{240}Pu	5.82E-02		alpha, gamma	6.56E3 yr	Y	Y	(0.2266)	0.01319	0.16535
		^{236}U	alpha, gamma	2.342E7 yr		Y	(1.0302E-07)		
		^{232}Th	alpha, gamma	1.4E10 yr		Y	(3.8545E-17)		
					subtotal alpha =		0.2266015		
^{241}Pu	3.4E-03		beta, alpha, gamma	14.4 yr	N	Y	(1.229E-03)	0.00591	0.07409
		^{241}Am	alpha, gamma	432.7yr		Y	(1.7382)		
		^{237}Np	alpha, gamma	2.1E6yr		Y	(4.8397E-06)		
		^{237}U	beta, gamma	6.75 d		N	-		
		^{233}Pa	beta, gamma	27d		N	-		
		^{233}U	alpha, gamma	1.592E5yr		Y	(1.1141E-10)		
					subtotal alpha =		1.74044		
^{242}Pu	2.4E-04		alpha, gamma	3.75E5 yr	Y	Y	(3.9259E-03)	9.4219E-07	0.00001
		^{238}U	alpha, gamma	4.47E9yr		Y	(9.2881E-12)		
		^{234}Th	beta, gamma	24.1d		N	-		
		^{234}Pa	beta, gamma	1.2m/6.7hr		N	-		
		^{234}U	alpha, gamma	2.46E5yr		Y	(1.9756E-16)		
					subtotal alpha =		0.0039258		
^{241}Am Impurity + Gr	200ug/g		alpha, gamma		Y	Y	(3.3447)	0.00067	0.0084

Table 4-9. (continued).

WG Pu (Pu-52) composition[a]	Mass fraction at time 0[a]	Daughters	Radiation type, decay (primary, secondary)	Half-life	TRU (Y/N)	Alpha emitter (Y/N)	Total alpha activity of parent + daughters at 15 years per gram isotope (Ci)	Total alpha activity of parent + daughter at 15 years per g-WG-Pu[b] (alpha Ci/g)	Total alpha activity fraction at 15 year decay
		^{237}Np	alpha, gamma	2.1E6yr		Y	(1.6726E-05)		
		^{233}Pa	beta, gamma	27d		N	-		
		^{233}U	alpha, gamma	1.592E5yr		Y	(5.4997E-10)		
		^{229}Th	alpha, gamma	7.3E3 yr		Y	(2.6282E-13)		
					subtotal alpha =		3.3466		
							Total =	0.07977	1.000

a. Estimated summary information for TSA stored alpha contaminated (CH ALLW + TRUW) waste from analysis of the Transuranic Waste Database (TWDB) information which reports radionuclide information for two primary radionuclides only per container, nuclides decayed to stable elements, EDF PSPI-015546-10, 11/16/95.

b. Mass fraction at time 0 times the sum of alpha activity of parent and daughters at 15 years per gram isotope.

Table 4-10. Plutonium mixture summary for heat source plutonium (HS Pu/Pu-83) waste.

HS Pu (PU-83) composition[a]	Mass fraction at time 0[a]	Daughters	Radiation type, decay (primary, secondary)	Half-life	TRU (Y/N)	Alpha emitter (Y/N)	Total alpha activity of parent + daughters at 15 years per g isotope (Ci)	Total alpha activity of parent + daughter at 15 years per g-HS-Pu[b] (alpha Ci/g)	Total alpha activity fraction at 15 year decay
^{236}Pu	1E-06		alpha, gamma	2.851 yr	N	Y	(1.3851E+02)	9.7096E-05	7.636E-06
		^{232}U	alpha, gamma	68.9 yr	N	Y	(1.9485E+01)		
		^{228}Th	alpha, gamma	1.913 yr	N	Y	(1.9318E+01)		
		^{224}Ra	alpha, gamma	3.66 d	N	Y	(1.967E+01)		
		^{220}Rn	alpha, gamma	3.825 d	N	Y	-		
		^{216}Po	alpha, gamma	150 msec	N	Y	(4.0996)		
		^{212}Pb	beta, gamma	10.64 hr	N	N	-		
		^{212}Bi	beta, gamma, alpha	1.01 hr	N	Y	(7.4667)		
		^{212}Po	alpha, gamma	45.1 sec	N	Y	(1.3209E+01)		
		^{208}Tl	beta, gamma	3.053 min	N	N	-		
		^{208}Pb	stable	-	-	-	-		
					subtotal alpha=		97.096		
^{238}Pu	0.835		alpha, gamma	87.7 yr	Y	Y	(1.5204E+01)	1.2696E+01	9.9843E-01
		^{234}U	alpha, gamma	2.454E5yr	N	Y	(7.3393E-04)		
		^{230}Th	alpha, gamma	7.54E4 yr	N	Y	(4.9797E-08)		
		^{226}Ra	alpha, gamma	1600 yr	N	Y	(1.1067E-10)		
					subtotal alpha =		15.205		
^{239}Pu	0.14		alpha, gamma	2.41E4 yr	Y	Y	(0.06201)	8.6819E-03	6.8275E-04
		^{235}U	alpha, gamma	7.04E8 yr		Y	(8.288E-10)		
		others	-	-	-	-	-		
					subtotal alpha =		0.06201		
^{240}Pu	0.02		alpha, gamma	6.56E3 yr	Y	Y	(0.2266)	4.532E-03	3.564E-04
		^{236}U	alpha, gamma	2.342E7 yr		Y	(1.0302E-07)		
		^{232}Th	alpha, gamma	1.4E10 yr		Y	(3.8545E-17)		
					subtotal alpha =		0.2266		
^{241}Pu	0.004		beta, alpha, gamma	14.4 yr	N	Y	(1.229E-03	6.96E-03	5.2611E-04
		^{241}Am	alpha, gamma	432.7yr		Y	(1.7382		
		^{237}Np	alpha, gamma	2.1E6yr		Y	(4.8397E-06		
		^{237}U	beta, gamma	6.75 d		N	-		
		^{233}Pa	beta, gamma	27d		N	-		
		^{233}U	alpha, gamma	1.592E5yr		Y	(1.1141E-10)		
					total alpha =		1.7404		

Table 4-10. (continued).

HS Pu (PU-83) composition[a]	Mass fraction at time 0[a]	Daughters	Radiation type, decay (primary, secondary)	Half-life	TRU (Y/N)	Alpha emitter (Y/N)	Total alpha activity of parent + daughters at 15 years per g isotope (Ci)	Total alpha activity of parent + daughter at 15 years per g-HS-Pu[b] (alpha Ci/g)	Total alpha activity fraction at 15 year decay
^{242}Pu	0.001		alpha, gamma	3.75E5 yr	Y	Y	(3.9259E-03)	3.9258E-06	3.0873E-7
		^{238}U	alpha, gamma	4.47E9yr		Y	(9.2881E-12)		
		^{234}Th	beta, gamma	24.1d		N	-		
		^{234}Pa	beta, gamma	1.2m/6.7hr		N	-		
		^{234}U	alpha, gamma	2.46E5yr		Y	(1.9756E-16)		
					subtotal alpha =		0.003926		
							Total =	1.2716E+01	1.000

a. Estimated summary information for TSA stored alpha contaminated (CH ALLW + TRUW) waste from analysis of the Transuranic Waste Database (TWDB) information which reports radionuclide information for two primary radionuclides only per container, nuclides decayed to stable elements, EDF PSPI-015546-10, 11/16/95.

b. Mass fraction at time 0 times the sum of alpha activity of parent and daughters at 15 years per gram isotope.

Table 4-11. Alpha activity at 15 year due to Pu-236 isotope.[a]

Nuclide	Daughters at 15 year	15 year mass fraction	Alpha curies/gram	Alpha curies/gram at 15 years
Pu-236		0.02607	531.3	1.3851E+01
	U-232	0.86985	22.4	1.9485E+01
	Th-228	0.02357	819.6	1.9318E+01
	Ra-224	1.2348E-04	1.593E+05	1.967E+01
	Rn-220	1.2903E-04	Noble gas	—
	Po-216	5.8565E-11	7E+10	4.0996
	Pb-212	1.4955E-05	(beta emmitter) alpha = 0	—
	Bi-212	1.4185E-06	5.2638E+06	7.4667
	Tl-208	2.5704E-08	(beta emmitter) alpha = 0	—
	Po-212	1.128E-08	1.171E+09	1.3209E+01
	Pb-208	8.0224E-02	Stable	—
			Subtotal	9.7096E+01

a. EDF PSPI-015546-10, 11/16/95.

Table 4-12. Alpha activity at 15 year due to Pu-238 isotope.[a]

Nuclide	Daughters at 15 year	15 year Mass Fraction	Alpha Curies/gram	Alpha Curies/gram at 15 years
Pu-238		0.8882	17.119	1.5204E+01
	U-234	0.1179	0.006225	7.3393E-04
	Th-230	2.415E-06	0.02062	4.9797E-08
	Ra-226	1.119E-10	0.9890	1.1067E-10
			Subtotal	1.5205E+01

a. EDF PSPI-015546-10, 11/16/95.

Table 4-13. Alpha activity at 15 year due to Pu-239 isotope.[a]

Nuclide	Daughters at 15 year	15 year mass fraction	Alpha curies/gram	Alpha curies/gram at 15 years
Pu-239		.99957	.06204	0.06201
	U-235	4.312E-04	1.922E-06	8.288E-10
	Others	E-15	—	—
			Subtotal	0.06201

a. EDF PSPI-015546-10, 11/16/95.

Table 4-14. Alpha activity at 15 year due to Pu-240 isotope.[a]

Nuclide	Daughters at 15 year	15 year mass fraction	Alpha curies/gram	Alpha curies/gram at 15 years
Pu-240		.99842	0.22696	0.2266
	U-236	.00158	6.508E-05	1.0302E-07
	Th-232	3.515E-10	1.0967E-07	3.8545E-17
			Subtotal	0.2266

a. EDF PSPI-015546-10, 11/16/95.

Table 4-15. Alpha activity at 15 year due to Pu-241 isotope.[a]

Nuclide	Daughters at 15 year	15 year Mass Fraction	Alpha Curies/gram	Alpha Curies/gram at 15 years
Pu-241		0.48577	0.00253	1.229E-03
	Am-241	0.50736	3.426	1.7382
	Np-237	6.8693E-03	7.0454E-04	4.8397E-06
	U-237	1.5044E-08	(beta emmitter) alpha = 0	—
	Pa-233	2.3431E-10	(beta emmitter) alpha = 0	—
	U-233	1.1565E-08	9.6332E-03	1.1141E-10
			Subtotal	1.7394

a. EDF PSPI-015546-10, 11/16/95.

Table 4-16. Alpha activity at 15 year due to Pu-242 isotope.[a]

Nuclide	Daughters at 15 year	15 year mass fraction	Alpha curies/gram	Alpha curies/gram at 15 years
Pu-242		0.99997	3.926E-03	3.9259E-03
	U-238	2.763E-05	3.3616E-07	9.2881E-12
	Th-234	4.0544E-16	(beta emmitter) alpha = 0	—
	Pa-234	0	(beta emmitter) alpha = 0	—
	U-234	3.1701E-14	6.225E-03	1.9756E-16
			Subtotal	3.9259E-03

a. EDF PSPI-015546-10, 11/16/95.

Table 4-17. Alpha activity at 15 year due to Am-241 isotope.[a]

Nuclide	Daughters at 15 year	15 year mass fraction	Alpha curies/gram	Alpha curies/gram at 15 years
AM-241		0.97626	3.426	3.3447
	Np-237	0.02374	7.0454E-04	1.6726E-05
	Pa-233	8.1426E-10	(beta emmitter) alpha = 0	—
	U-233	5.7091E-08	9.6332E-03	5.4997E-10
	Th-229	1.2362E-12	0.2126	2.6282E-13
			Subtotal	3.3447

a. EDF PSPI-015546-10, 11/16/95.

Table 4-18. TSA stored waste distribution by alpha concentration.[a]

Interval[b]		Gross mass identified in TWDB radionuclide analysis[c] (g)	Waste mass identified in TWDB radionuclide analysis[c] (g)	Percent distribution of total gross mass identified[b]	Estimated percent distribution for total TSA stored waste mass[d]	Cummulative percent distribution
	0	5.16E+09	3.99E+09	23.755 %	23.8 %	23.8 %
	1	4.09E+09	3.44E+09	18.842 %	18.8 %	42.6 %
	2	3.10E+09	2.48E+09	14.300 %	14.3 %	56.9 %
	3	2.20E+09	1.58E+09	10.122 %	10.1 %	67.0 %
	4	8.12E+08	6.09E+08	3.742 %	3.7 %	70.8 %
	5	5.96E+08	4.50E+08	2.749 %	2.7 %	73.5 %
	6	4.63E+08	3.55E+08	2.135 %	2.1 %	75.6 %
	7	3.73E+08	2.85E+08	1.720 %	1.7 %	77.4 %
	8	2.94E+08	2.27E+08	1.354 %	1.4 %	78.7 %
	9	2.70E+08	2.13E+08	1.242 %	1.2 %	80.0 %
	10	2.51E+08	2.01E+08	1.156 %	1.2 %	81.1 %
	11	2.17E+08	1.72E+08	0.998 %	1.0 %	82.1 %
	12	1.71E+09	1.42E+09	7.864 %	7.9 %	90.0 %
	13	9.63E+08	8.26E+08	4.439 %	4.4 %	94.4 %
	14	4.39E+08	3.80E+08	2.022 %	2.0 %	96.4 %
	15	2.50E+08	2.22E+08	1.150 %	1.2 %	97.6 %
	16	1.36E+08	1.15E+08	0.627 %	0.6 %	98.2 %
	17	8.07E+07	6.76E+07	0.372 %	0.4 %	98.6 %
	18	4.75E+07	3.83E+07	0.219 %	0.2 %	98.8 %
	19	3.51E+07	2.66E+07	0.162 %	0.2 %	99.0 %
	20	2.61E+07	2.03E+07	0.120 %	0.1 %	99.1 %
	21	1.11E+08	8.35E+07	0.510 %	0.5 %	99.6 %
	22	2.83E+07	1.91E+07	0.131 %	0.1 %	99.7 %
	23	1.80E+07	1.12E+07	0.083 %	<0.1 %	99.8 %
	24	9.92E+06	7.12E+06	0.046 %	<0.1 %	99.9 %
	25	9.41E+06	4.60E+06	0.043 %	<0.1 %	99.9 %
	26	3.34E+06	2.24E+06	0.015 %	<0.1 %	99.9 %
	27	2.57E+06	1.64E+06	0.012 %	<0.1 %	99.9 %
	28	1.29E+06	8.14E+05	0.006 %	<0.1 %	99.9 %
	29	1.10E+06	6.40E+05	0.005 %	<0.1 %	99.9 %
	30	8.84E+06	5.99E+06	0.041 %	<0.1 %	100.0 %
	31	4.83E+06	2.93E+06	0.022 %	<0.1 %	100.0 %
	32	4.03E+05	1.91E+05	0.002 %	<0.1 %	100.0 %
	33	0	0	0.000 %	<0.1 %	100.0 %
	34	5.94E+05	0.00E+00	0.003 %	<0.1 %	100.0 %
Total	34	2.17E+10g 2.17E+07kg	1.73E+10g 1.73E+07kg	100 %		100 %

a. EDF PSPI-015546-11, 11/20/95.

b. Interval ranges are identified in Table 4-19.

c. The total gross mass identified in the TWDB analysis (2.17E+07kg) represents approximately 70% of the total estimated stored waste gross mass (12E+06kg(ALLW)+19E+06kg(TRUW)=3.1E+07kg).

d. Best estimate of distribution by alpha concentration for the total stored waste (mass basis).

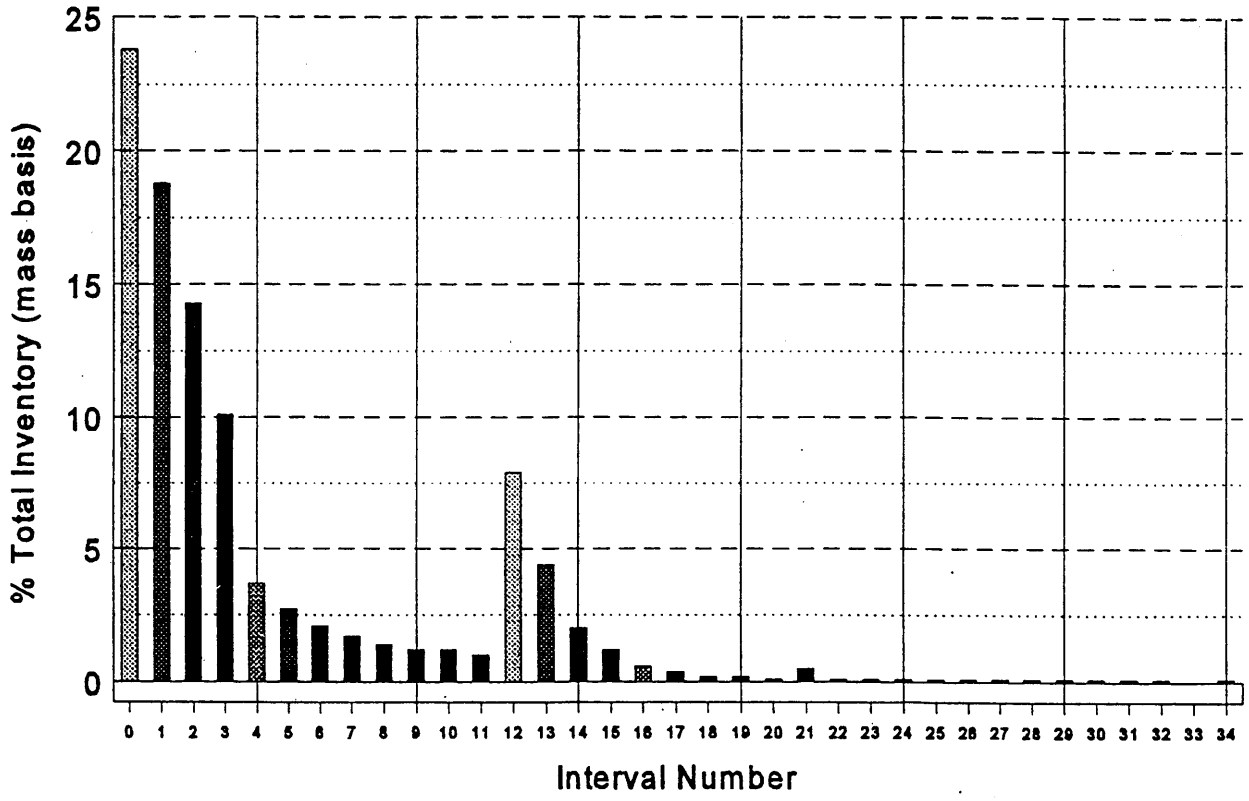


Figure 4-1. TSA Stored Waste Distribution by Alpha Activity Concentration Interval Number.

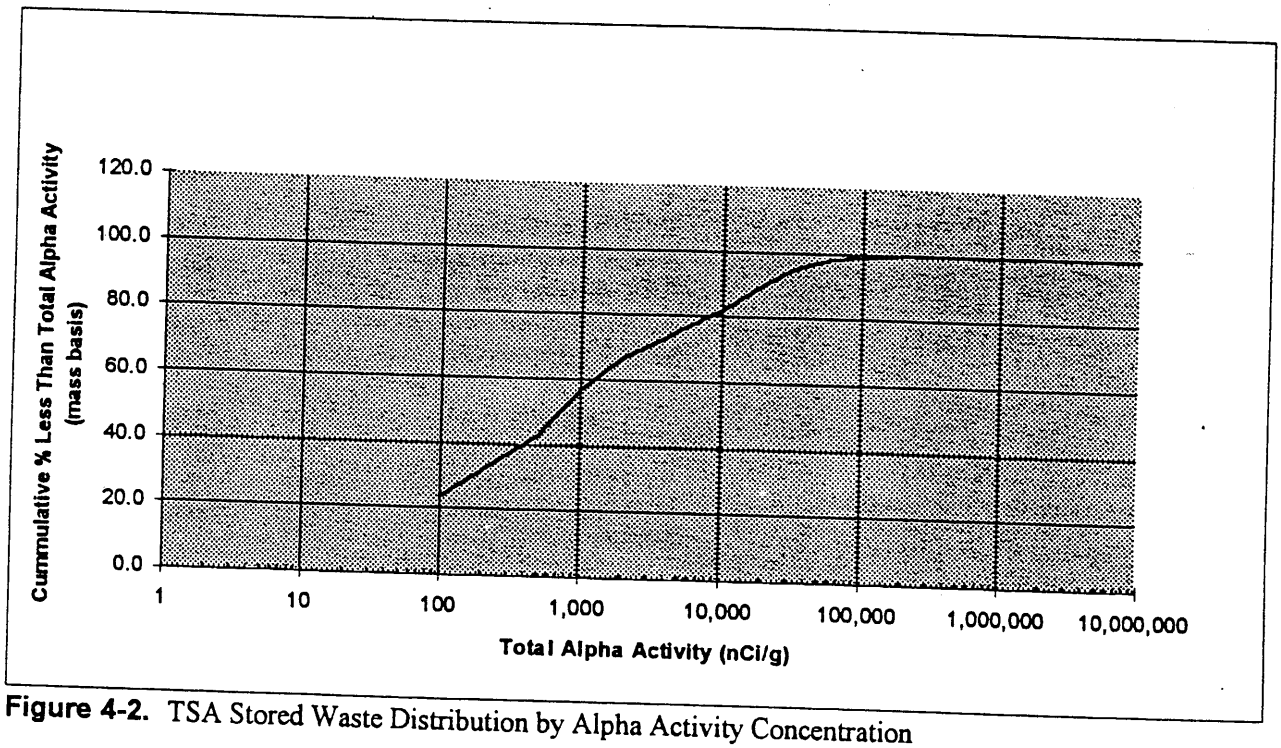


Figure 4-2. TSA Stored Waste Distribution by Alpha Activity Concentration

Table 4-19. TRU alpha activity concentration intervals.[a]

Interval number			Interval description		
0			TRU alpha activity conc	<	100 nCi/g[b]
1	100 nCi/g	≤	TRU alpha activity conc	<	500 nCi/g
2	500 nCi/g	≤	TRU alpha activity conc	<	1,000 nCi/g
3	1,000 nCi/g	≤	TRU alpha activity conc	<	2,000 nCi/g
4	2,000 nCi/g	≤	TRU alpha activity conc	<	3,000 nCi/g
5	3,000 nCi/g	≤	TRU alpha activity conc	<	4,000 nCi/g
6	4,000 nCi/g	≤	TRU alpha activity conc	<	5,000 nCi/g
7	5,000 nCi/g	≤	TRU alpha activity conc	<	6,000 nCi/g
8	6,000 nCi/g	≤	TRU alpha activity conc	<	7,000 nCi/g
9	7,000 nCi/g	≤	TRU alpha activity conc	<	8,000 nCi/g
10	8,000 nCi/g	≤	TRU alpha activity conc	<	9,000 nCi/g
11	9,000 nCi/g	≤	TRU alpha activity conc	<	10,000 nCi/g
12	10,000 nCi/g	≤	TRU alpha activity conc	<	20,000 nCi/g
13	20,000 nCi/g	≤	TRU alpha activity conc	<	30,000 nCi/g
14	30,000 nCi/g	≤	TRU alpha activity conc	<	40,000 nCi/g
15	40,000 nCi/g	≤	TRU alpha activity conc	<	50,000 nCi/g
16	50,000 nCi/g	≤	TRU alpha activity conc	<	60,000 nCi/g
17	60,000 nCi/g	≤	TRU alpha activity conc	<	70,000 nCi/g
18	70,000 nCi/g	≤	TRU alpha activity conc	<	80,000 nCi/g
19	80,000 nCi/g	≤	TRU alpha activity conc	<	90,000 nCi/g
20	90,000 nCi/g	≤	TRU alpha activity conc	<	100,000 nCi/g
21	100,000 nCi/g	≤	TRU alpha activity conc	<	200,000 nCi/g
22	200,000 nCi/g	≤	TRU alpha activity conc	<	300,000 nCi/g
23	300,000 nCi/g	≤	TRU alpha activity conc	<	400,000 nCi/g
24	400,000 nCi/g	≤	TRU alpha activity conc	<	500,000 nCi/g
25	500,000 nCi/g	≤	TRU alpha activity conc	<	600,000 nCi/g
26	600,000 nCi/g	≤	TRU alpha activity conc	<	700,000 nCi/g
27	700,000 nCi/g	≤	TRU alpha activity conc	<	800,000 nCi/g
28	800,000 nCi/g	≤	TRU alpha activity conc	<	900,000 nCi/g
29	900,000 nCi/g	≤	TRU alpha activity conc	<	1,000,000 nCi/g
30	1,000,000 nCi/g	≤	TRU alpha activity conc	<	2,500,000 nCi/g
31	2,500,000 nCi/g	≤	TRU alpha activity conc	<	5,000,000 nCi/g
32	5,000,000 nCi/g	≤	TRU alpha activity conc	<	7,500,000 nCi/g
33	7,500,000 nCi/g	≤	TRU alpha activity conc	<	10,000,000 nCi/g
34	10,000,000 nCi/g	≤	TRU alpha activity conc		

a. EDF RWMC-716, 3/4/94.

b. TRU alpha activity concentration per gross mass (nCi/g).

4.1.2 Electron Data

The electron source term data are comprised of emitted atomic electrons, internal conversion and Auger-electrons, and beta (β) radiations termed continuous radiation due to the associated continuous energy spectra. As with the alpha data, the mass of each member of the parent/progeny series decay chain is determined at a 15 year post purification date. The information provided in this section is based on work by Becker (1994).[k]

The total atomic electron source term per parent in units of keV/sec is computed using the total average electron energy per disintegration, <e>, (keV/dis) as tabulated in the Table of Radioactive Isotopes.[4-2] The value <e> is multiplied by the respective parent/progeny radionuclide decay rate, disintegrations/second, as computed at 15 years from time zero due to an initial parent/parent compound mass of one gram. This same process is followed for the continuous β radiation source by multiplying the total average β energy per disintegration <β>, (keV/dis), by the respective parent/progeny radionuclide activity, (dis/sec), at the 15 year decay time.

For those individual chain members yielding atomic electrons, internal conversion/Auger-electrons, and continuous β radiations, the total average energy per disintegration is the sum of the components. This value is then multiplied by the disintegration rate of a given radionuclide to arrive at the electron energy emission rate in keV/sec. The total average electron energy emission rate for a given parent/progeny chain is obtained by summing the computed energy emission rate contributed by each member of the chain at 15 years. The radon exception noted for the alpha source term computations also applies to the electron source term.

The results of the electron source term evaluation for the list of radionuclides identified in Table 4-5 is shown in Table 4-20. The californium isotope, although listed in Table 4-5, is omitted as there are no tabulated Evaluated Nuclear Structure Data File (ENSDF) data regarding electron decay modes and the intensities of the ^{252}Cf fission products. This is of no great significance as there are only one or two drums listed in the Transuranic Waste Database (TWDB) which indicate the presence of californium. Additionally, the contribution to the electron source term from the progeny of these californium spontaneous fission decays can safely be dismissed due to the very low branching ratios.

No adjustment has been made for subsequent electron radiation interactions with either the source material itself or the waste matrix. The tabulated data is strictly the total energy emission rate per second computed as described.

4.1.3 Photon Data

The photon source term includes all γ-rays and x-rays associated with the parent/progeny decay chain members. The information provided in this section is based on work by Becker (1994).[k]

---

k. G. K. Becker, *Low-Level Alpha Contaminated and Transuranic Waste Photon/Electron Source Term Data*, RWMC EDF-669, January 10, 1994.

Table 4-20. Total electron yield per gram parent material at 15 years post purification.[a]

Radionuclide source material	Total electron energy (keV/sec)
^{241}Am	3.7643E+12
^{243}Am	1.3057E+12
^{252}Cf	—
^{237}Np	1.6687E+09
^{236}Pu	7.1147E+14
^{238}Pu	5.5795E+12
^{239}Pu	7.5145E+03
^{240}Pu	4.0903E+04
^{241}Pu	1.1589E+13
^{242}Pu	1.1762E+09
^{226}Ra	3.6877E+13
^{230}Th	5.1243E+09
^{232}Th	3.7349E+05
^{233}U	2.0408E+09
^{235}U	1.7434E+07
^{238}U	6.3847E+06
HS Pu	4.7059E+12
WG Pu	4.0825E+10

a. EDF RWMC-669, 1/10/94.

The data source utilized in the determination of the photon source term is the Table of Radioactive Isotopes published in 1986.[4-2] The data for this publication came from the ENSDF, from which the Nuclear Data Sheets are published as they existed circa 1984. Some of the ENSDF data has been edited by the authors prior to its inclusion in the Table of Radioactive Isotopes in addition to local INEL-based edits resulting from specialized evaluations. Therefore, the data file utilized in the source term calculations is a modified version of the original ENSDF data.

In order to interpret the photon source term data, it is necessary to delineate the manner in which it was derived to establish a baseline for its subsequent use. As with the alpha and electron source terms, all photon source term data is based on an initial one-gram mass of a given parent radionuclide or parent radionuclidic compound such as weapons-grade plutonium (WG Pu). The parent radionuclides and radionuclidic compounds considered in this evaluation are again as specified in Table 4-5, and the nominal radionuclidic composition of the two compounds, WG Pu and HS Pu, are shown in Table 4-6.

The photon source term is computed for each indicated parent radionuclide and/or compound at 15 years post purification. As with the alpha and electron source terms, this requires that the decay and ingrowth of all members of the parent/progeny decay chain be accounted for at 15 years from time zero, where time = 0 is the time when the parent radionuclide or radionuclide compound mass is one gram. Thus all computations yield the photon emission rate (photons/second-energy group) due to an initial one gram time zero mass of parent material at a 15-year decay/ingrowth date. The photons are grouped into 50 keV-wide energy bins to simplify downstream computations.

To illustrate, the radionuclide chain members which are components of the photon source specified at 15 years post purification for ^{236}Pu are: ^{236}Pu --> ^{232}U --> ^{228}Th --> ^{224}Ra --> ^{220}Rn --> ^{216}Po --> ^{212}Pb --> :: ^{212}Bi --> (α = 0.3594) ^{208}Tl --> ^{208}Pb :: ^{212}Bi --> (β = 0.6406)^{212}Po --> ^{208}Pb. The mass of each radionuclide in the chain is determined at 15 years and the photon yield associated with that mass is summed together to obtain the total photon source term for the parent/progeny source at 15 years.

The exception to this method involves the isotopes of the radon nuclide as indicated in the alpha and electron source term sections. Photons associated with the radon isotopes as they occur in any decay chain are eliminated from the total summed photon yield for a given parent and therefore such contribution is not included in the tabular and spectral data. Additionally, note that there are several radionuclides that have spontaneous fission branches. Since a spontaneous fission event leads to many different daughter nuclides, the associated γ-rays will be very weak and therefore have not been included in the source term. The branch intensities of the Table 4-5 nuclides having spontaneous fission branches identified in the Table of Radioactive Isotopes are: ^{233}U (1.3×10^{-10}%), ^{238}Pu (1.84×10^{-7}%), ^{239}Pu (4.4×10^{-10}%), ^{241}Am (4.1×10^{-10}%), ^{242}Pu (5.5×10^{-4}%), and ^{243}Am (2.2×10^{-8}%). The contribution to the source term from the progeny of the spontaneous fission decays can safely be neglected due to the very low branching ratios. This is also effectively the case for the ^{252}Cf nuclide. There are no tabulated ^{252}Cf ENSDF data regarding the specific γ-rays and intensities of the daughters and it therefore has not been evaluated relative to a photon source term. This is of no great significance since there are only one or two drums listed in the TWDB database that indicate the presence of californium.

The photon source term specified for each parent/progeny chain includes all γ-rays in addition to x-rays arising from vacancies created in the K and L_1 atomic shells by internal conversion and electron-capture processes. The data have been processed into 50 keV energy bins as a reasonable compromise between data manipulation complications and data integrity as processed for input to photon shielding computations. In regard to the interpretation of the shielding calculation results, the source term does not include any consideration of source self-absorption, or for that matter, waste matrix attenuation of the source. This is primarily due to the fact that no valid uniformly-applicable information is available as to the source configuration and distribution within the waste matrix. Thus the source term data as presented is purely the theoretical photon yield from the parent/progeny source of interest at 15 years post purification. The subsequent data evaluator can apply corrections based on assumptions deemed reasonable or applicable for the case under study.

The results of the photon source term computations are shown in tabular form in Tables 4-21 through 4-37 (nuclide mass = 1.0 gram at t = 0). The data are in units of photons per second per 50 keV energy bin per gram parent/parent compound at 15 years from time zero or post purification. Each energy bin is represented in the tabular data by the bin energy midpoint in units of keV. For example, the energy bin spanning the 0-to-50 keV range is represented as the 25 keV bin, etc. The respective data is plotted in histogram form in Figures 4-3 through 4-19 with an ordinate scale of log base 10. The plotted data represent the number of photons per second per 50 keV interval at a 15 year decay time due to an initial time zero parent or parent compound mass of one gram. Note that using an ordinate scale of this nature is not precisely correct as photon/sec/gram/50 keV bin values less than 1.0 are not plotted. Nevertheless, such a representation is adequate for purposes of displaying the photon yield energy dependence.

Table 4-21. Tabular data for gamma spectrum of Am-241 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	5.21E+10	675	5.46E+05
75	4.45E+10	725	2.55E+05
125	3.49E+07	775	2.83E+04
175	5.15E+05	825	3.37E+03
225	1.13E+06	875	2.70E+03
275	1.45E+05	925	1.01E+03
325	1.10E+06	975	7.20E+02
375	5.65E+05	1,025	1.68E-06
425	8.62E+04	1,075	0.00E+00
475	2.43E+04	1,125	1.68E-06
525	1.04E+05		
575	1.60E+04		
625	8.40E+04		

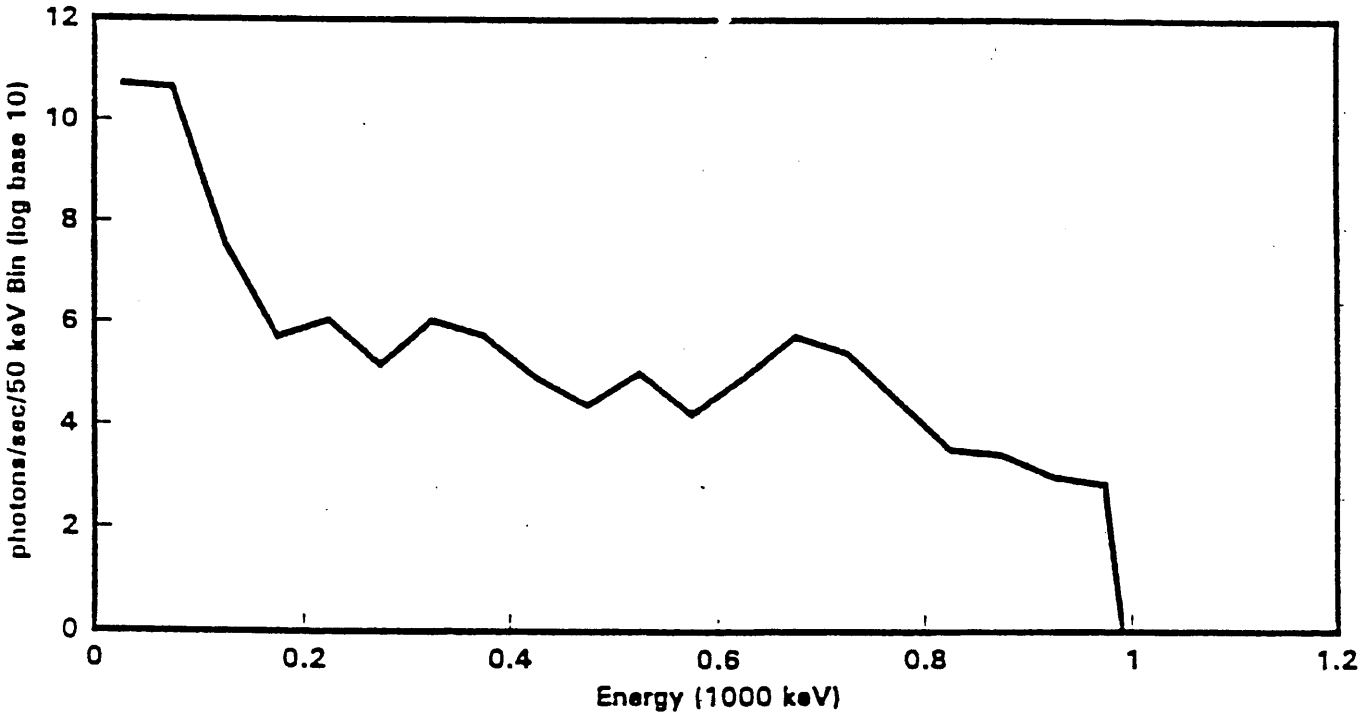


Figure 4-3. Gamma spectrum of Am-241 parent at 15 years post purification.

Table 4-22. Tabular data for gamma spectrum of Am-243 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	4.63E+09	575	7.48E-02
75	6.30E+09	625	2.42E+04
125	4.75E+09	675	6.99E+04
175	7.48E+06	725	2.73E-01
225	1.12E+09	775	5.02E-01
275	1.15E+09	825	2.15E-02
325	2.76E+08	875	4.09E-03
375	1.16E+05	925	1.36E-03
425	1.28E+06	975	3.69E-03
475	1.28E+06	1,025	3.87E-04
525	1.09E+05	1,075	1.45E-03

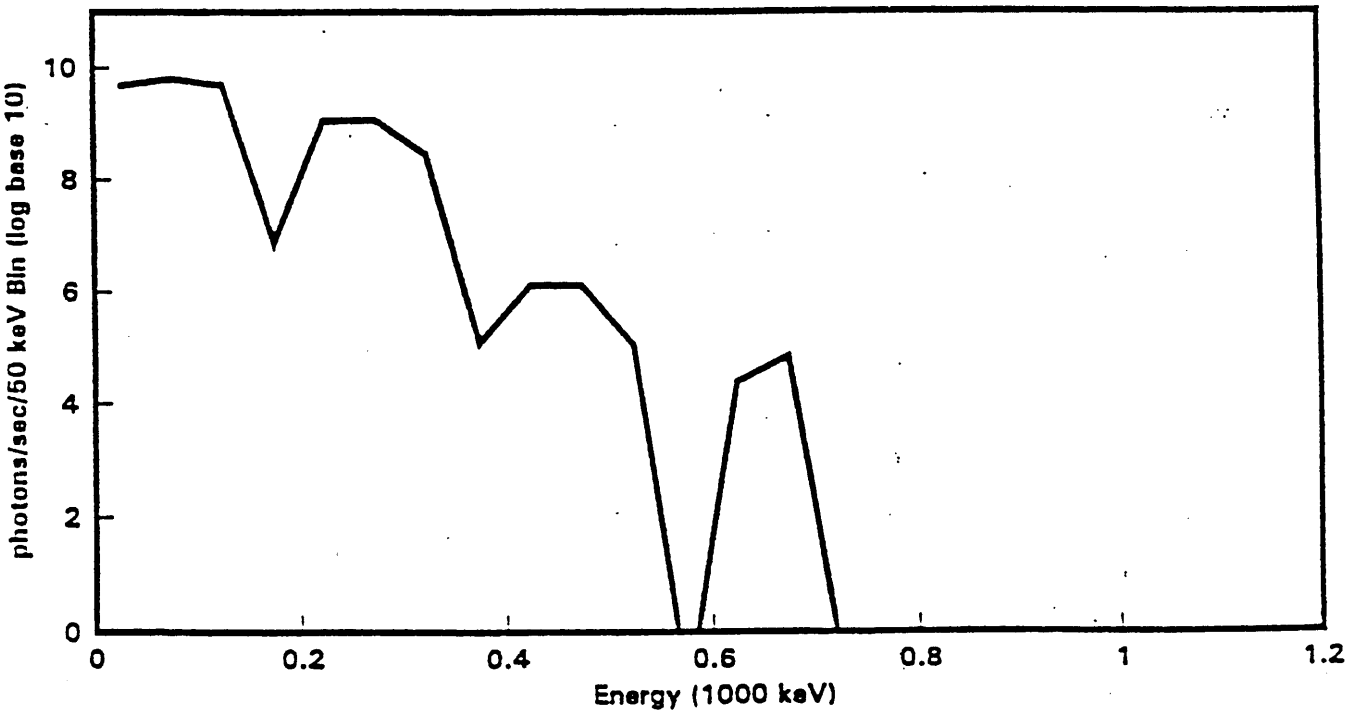


Figure 4-4. Gamma spectrum of Am-243 parent at 15 years post purification.

Table 4-23. Tabular data for gamma spectrum of Np-237 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.76E+07	675	5.16E-05
75	6.23E+00	725	4.73E-05
125	5.63E+05	775	0.00E+00
175	2.23E+05	825	0.00E+00
225	8.77E+04	875	3.57E-05
275	3.92E+03	925	0.00E+00
325	2.12E-01	975	0.00E+00
375	1.81E-02	1,025	1.42E-04
425	6.61E-04	1,075	0.00E+00
475	2.43E-03	1,125	1.42E-04
525	3.73E-04	1,175	0.00E+00
575	1.51E-04		
625	3.96E-05		

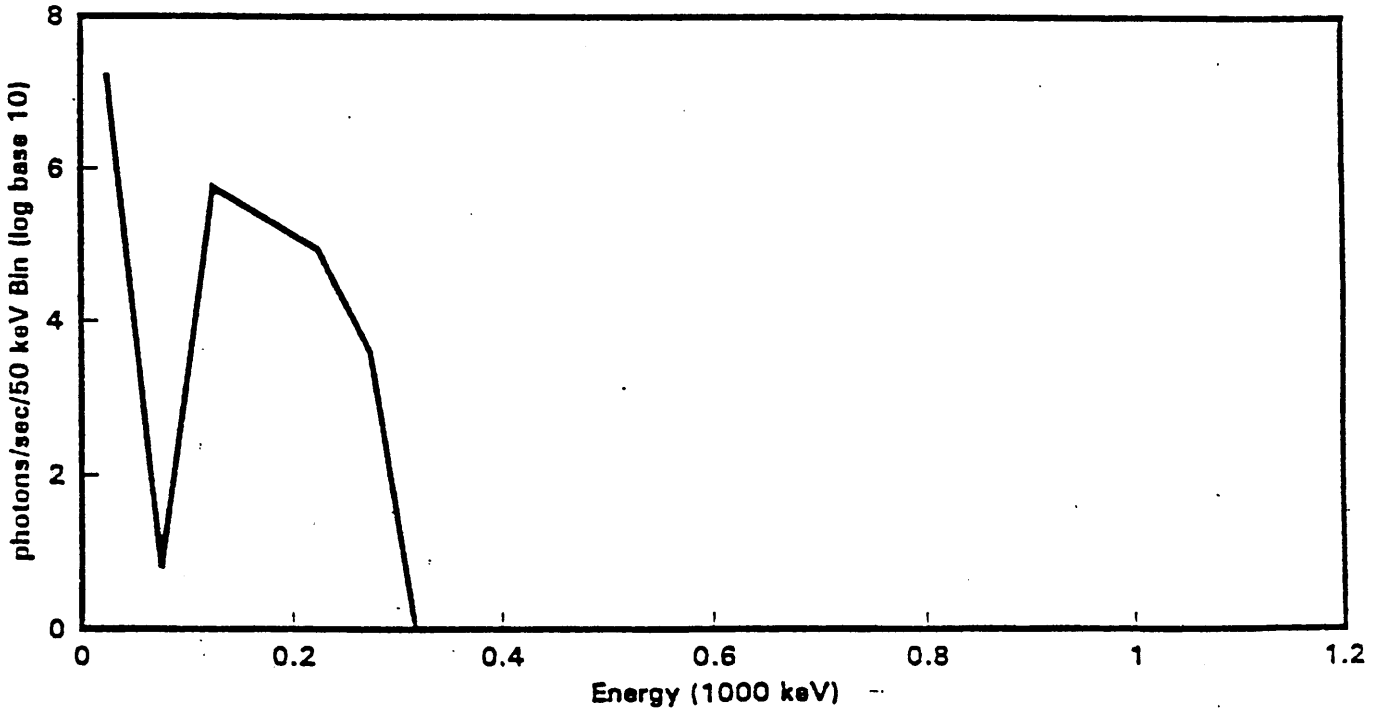


Figure 4-5. Gamma spectrum of Np-237 parent at 15 years post purification.

Table 4-24. Tabular data for gamma spectrum of Pu-236 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	2.49E+11	925	3.65E+08	1.825	9.22E+08
75	3.16E+11	975	1.32E+09	1.875	0.00E+00
125	6.08E+09	1.025	0.00E+00	1.925	0.00E+00
175	1.17E+09	1.075	5.68E+09	1.975	0.00E+00
225	3.68E+11	1.125	0.00E+00	2.025	0.00E+00
275	2.04E+10	1.175	7.89E+07	2.075	0.00E+00
325	2.50E+10	1.225	0.00E+00	2.125	0.00E+00
375	0.00E+00	1.275	1.47E+08	2.175	0.00E+00
425	5.31E+07	1.325	0.00E+00	2.225	0.00E+00
475	1.41E+08	1.375	1.97E+07	2.275	0.00E+00
525	6.43E+10	1.425	0.00E+00	2.325	0.00E+00
575	1.24E+10	1.475	0.00E+00	2.375	0.00E+00
625	2.23E+07	1.525	2.54E+09	2.425	0.00E+00
675	1.01E+08	1.575	0.00E+00	2.475	0.00E+00
725	5.20E+10	1.625	1.14E+10	2.525	0.00E+00
775	1.38E+10	1.675	6.16E+08	2.575	0.00E+00
825	1.13E+08	1.725	5.63E+06	2.625	2.93E+11
875	3.81E+10	1.775	0.00E+00	2.650	0.00E+00

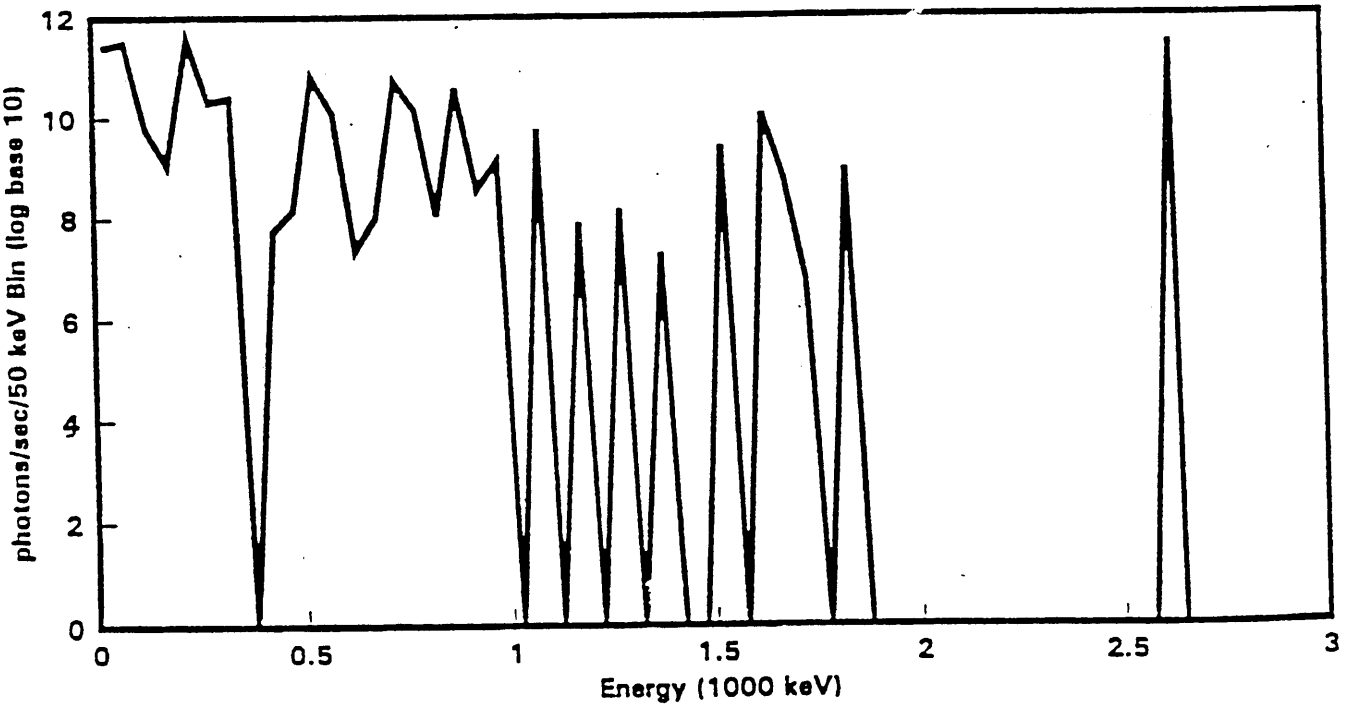


Figure 4-6. Gamma spectrum of Pu-236 parent at 15 years post purification.

Table 4-25. Tabular data for gamma spectrum of Pu-238 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bid Midpoint keV	Gamma Emission photons/sec-g
25	6.13E+10	625	2.17E-01
75	4.26E+07	675	2.71E-01
125	3.62E+05	725	4.67E+04
175	5.28E+06	775	2.12E+05
225	2.32E+04	825	6.95E+03
275	1.40E+03	875	1.89E+04
325	0.00E+00	925	9.59E+03
375	0.00E+00	975	4.50E+02
425	2.74E-05	1,025	9.33E+03
475	6.78E+00	1,075	5.93E+02
525	4.40E+00	1,125	0.00E+00
575	3.25E+00		

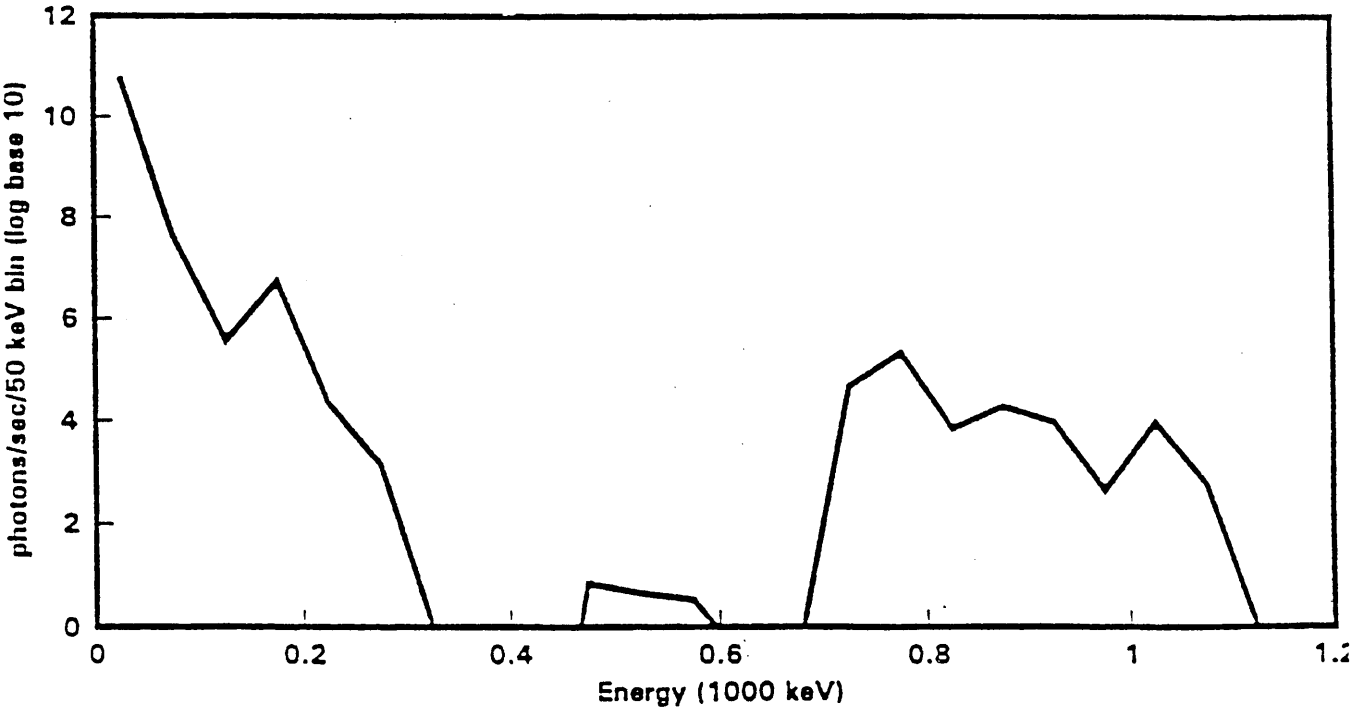


Figure 4-7. Gamma spectrum of Pu-238 parent at 15 years post purification.

Table 4-26. Tabular data for gamma spectrum of Pu-239 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	2.70E+05	575	5.32E+01
75	9.30E+05	625	7.93E+02
125	2.57E+05	675	5.03E+02
175	1.21E+04	725	1.94E+02
225	1.48E+04	775	3.57E+02
275	3.72E+03	825	1.53E+01
325	3.33E+04	875	2.91E+00
375	6.58E+04	925	9.64E-01
425	3.75E+04	975	2.62E+00
475	4.57E+03	1,025	2.75E-01
525	6.89E+00	1,075	1.03E+00

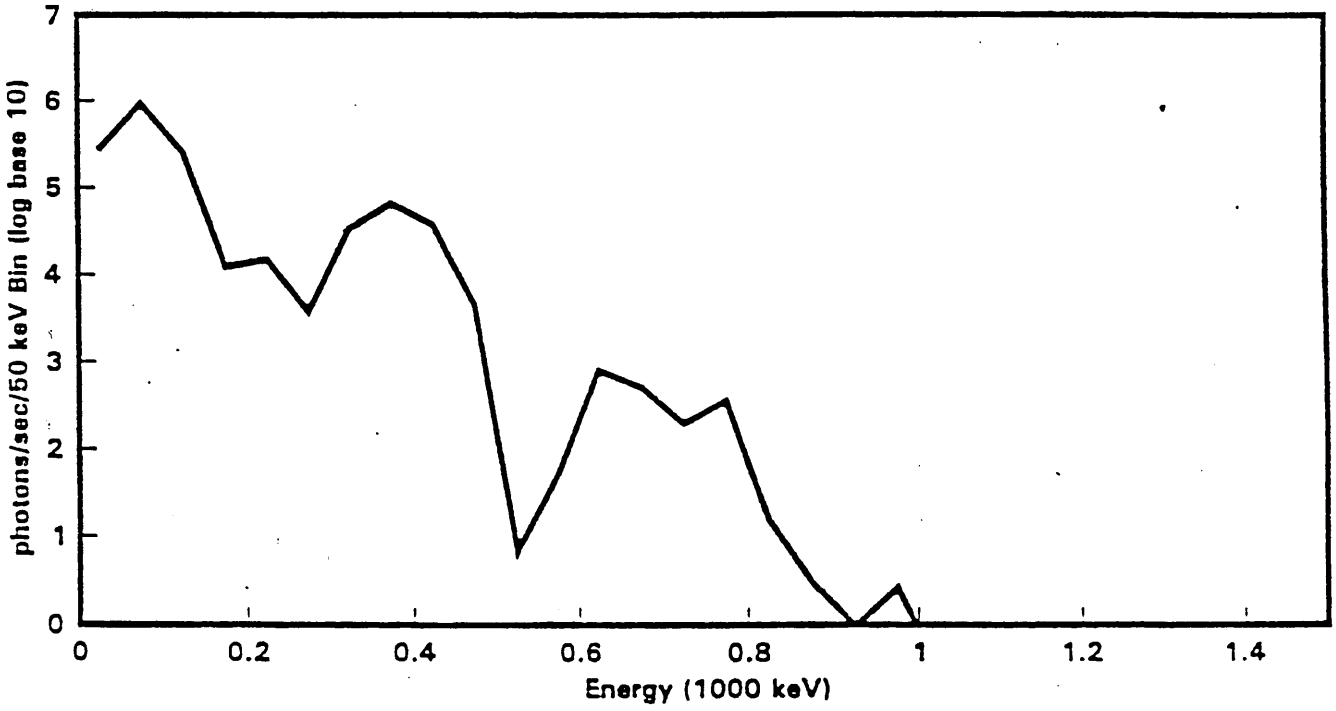


Figure 4-8. Gamma spectrum of Pu-239 parent at 15 years post purification.

Table 4-27. Tabular data for gamma spectrum of Pu-240 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	3.74E+06	525	1.18E+01
75	5.95E+03	575	0.00E+00
125	6.03E+05	625	1.03E+03
175	3.37E+04	675	2.85E+02
225	2.27E+03	725	0.00E+00
275	0.00E+00	775	0.00E+00
325	0.00E+00	825	0.00E+00
375	0.00E+00	875	4.69E+01
425	0.00E+00	925	0.00E+00
475	0.00E+00		

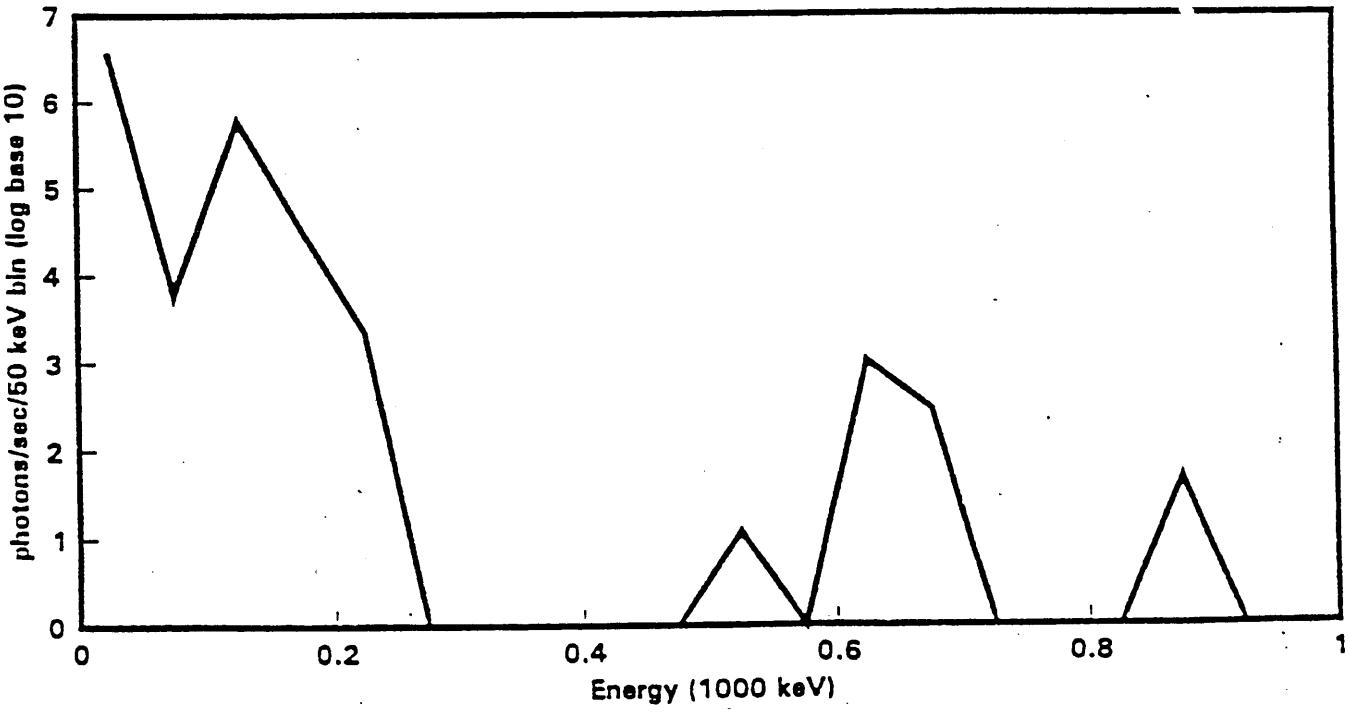


Figure 4-9. Gamma spectrum of Pu-240 parent at 15 years post purification.

Table 4-28. Tabular data for gamma spectrum of Pu-241 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	2.71E+10	675	2.84E+05
75	2.32E+10	725	1.32E+05
125	4.52E+07	775	1.47E+04
175	1.24E+06	825	1.75E+03
225	1.04E+07	875	1.41E+03
275	4.07E+05	925	5.23E+02
325	1.15E+06	975	0.00E+00
375	3.59E+05	1,025	3.39E-07
425	4.18E+04	1,075	0.00E+00
475	1.26E+04	1,125	3.39E-07
525	5.43E+04		
575	8.32E+03		
625	4.36E+04		

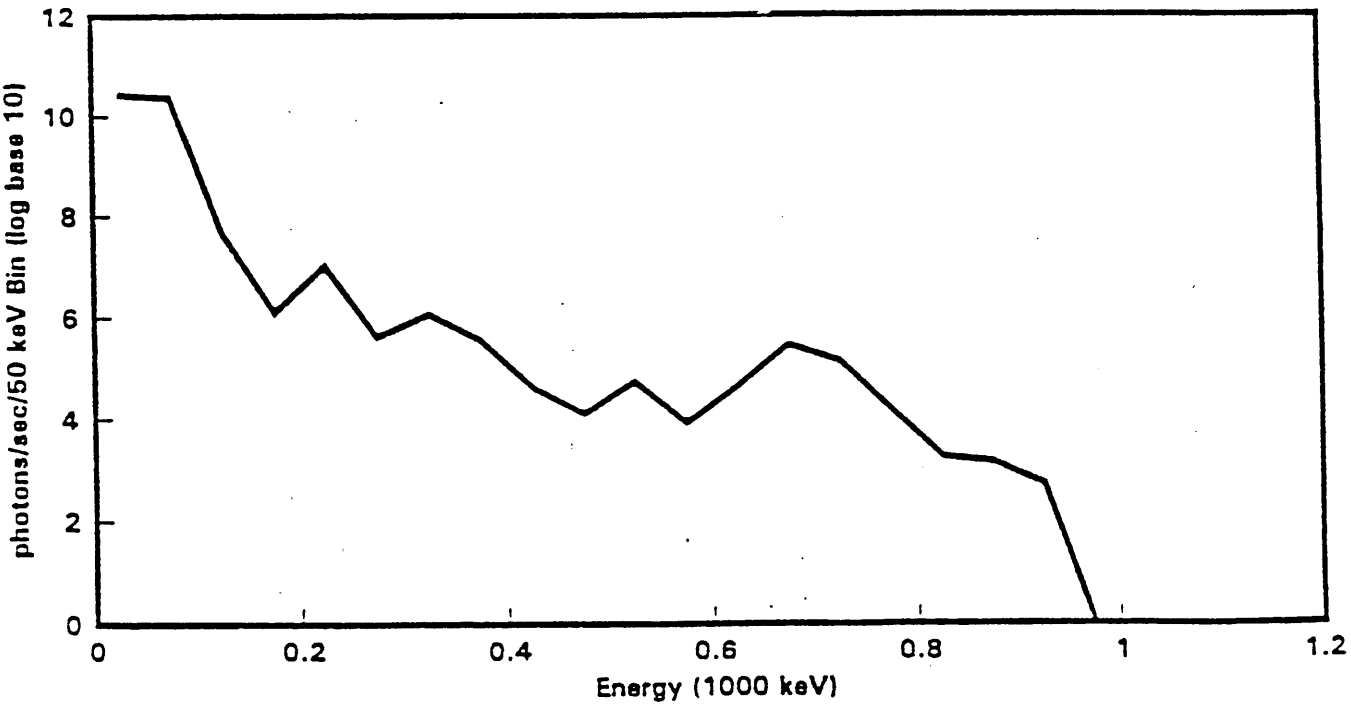


Figure 4-10. Gamma spectrum of Pu-241 parent at 15 years post purification.

Table 4-29. Tabular data for gamma spectrum of Pu-242 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.26E+07	375	0.00E+00
75	3.27E-02	425	1.82E-12
125	3.73E+03	475	1.18E-12
175	4.39E+02	525	8.75E-13
225	0.00E+00	575	5.83E-14
275	0.00E+00	625	7.29E-14
325	0.00E+00	675	1.09E-13

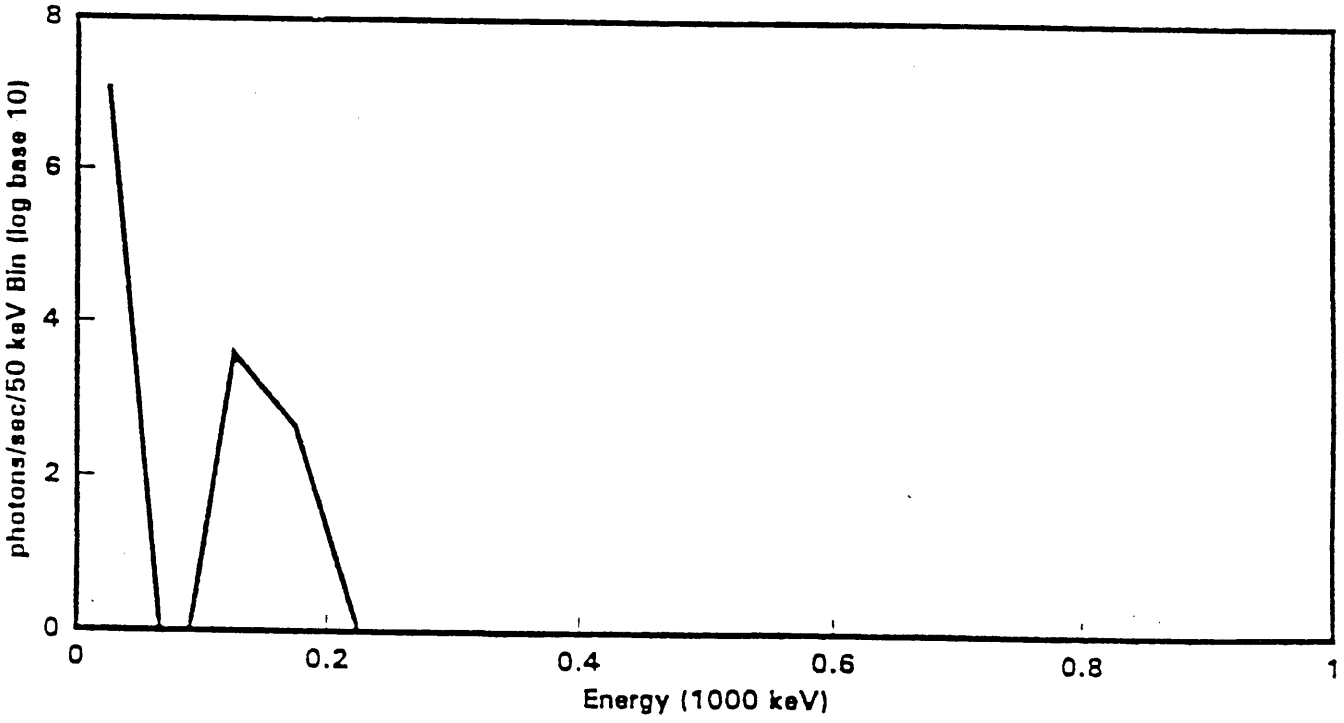


Figure 4-11. Gamma spectrum of Pu-242 parent at 15 years post purification.

Table 4-30. Tabular data for gamma spectrum of Ra-226 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	9.18E+09	1,125	5.88E+09	2,225	1.89E+09
75	9.84E+09	1,175	6.85E+08	2,275	1.38E+08
125	0.00E+00	1,225	2.43E+09	2,325	1.34E+07
175	0.00E+00	1,275	5.58E+08	2,375	7.04E+06
225	2.84E+09	1,325	9.07E+07	2,425	5.90E+08
275	7.67E+09	1,375	1.82E+09	2,475	7.80E+05
325	1.51E+08	1,425	1.46E+09	2,525	2.23E+06
375	1.40E+10	1,475	3.08E+07	2,575	1.49E+05
425	1.15E+08	1,525	1.12E+09	2,625	5.07E+05
475	5.44E+08	1,575	5.00E+08	2,675	1.34E+07
525	1.69E+08	1,625	7.06E+06	2,725	6.89E+05
575	1.81E+08	1,675	6.51E+08	2,775	1.19E+07
625	1.75E+10	1,725	1.15E+09	2,825	9.28E+05
675	6.55E+08	1,775	6.04E+09	2,875	6.04E+06
725	4.14E+08	1,825	9.54E+08	2,925	7.27E+06
775	2.47E+09	1,875	2.10E+08	2,975	9.33E+06
825	8.16E+08	1,925	1.93E+07	3,025	0.00E+00
875	0.00E+00	1,975	2.04E+06	3,075	1.04E+07
925	1.25E+09	2,025	2.69E+07	3,125	7.27E+05
975	0.00E+00	2,075	5.14E+07	3,175	7.52E+05
1,025	0.00E+00	2,125	4.95E+08	3,225	7.43E+04
1,075	0.00E+00	2,175	2.45E+07	3,275	3.73E+04
				3,325	0.00E+00

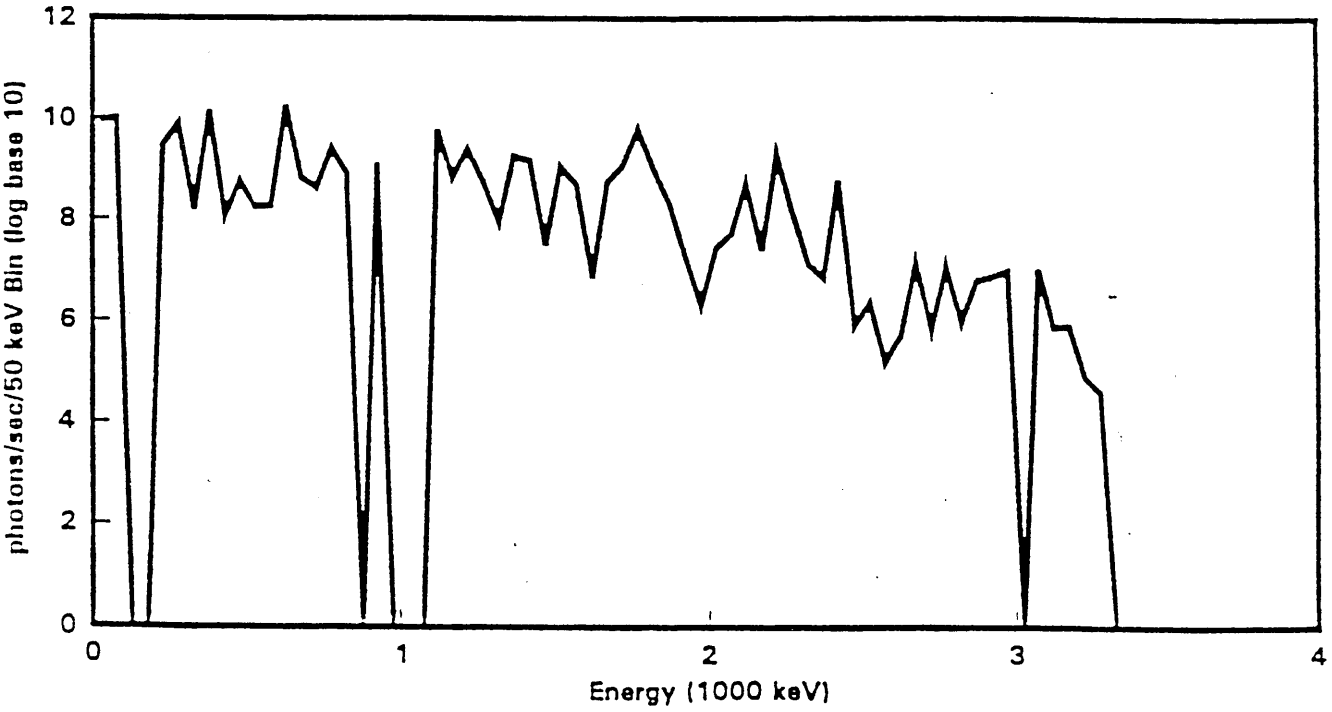


Figure 4-12. Gamma spectrum of Ra-226 parent at 15 years post purification.

Table 4-31. Tabular data for gamma spectrum of Th-230 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.06E+06	1.125	8.25E+05	2.225	2.85E+05
75	4.26E+06	1.175	9.61E+04	2.275	1.94E+04
125	3.72E+05	1.225	3.41E+05	2.325	1.87E+03
175	2.32E+05	1.275	7.82E+04	2.375	9.87E+02
225	3.93E+05	1.325	1.27E+04	2.425	8.28E+04
275	1.16E+06	1.375	2.55E+05	2.475	1.09E+02
325	2.11E+04	1.425	2.05E+05	2.525	3.13E+02
375	1.94E+06	1.475	4.28E+03	2.575	2.08E+01
425	1.82E+04	1.525	1.57E+05	2.625	7.11E+01
475	7.57E+04	1.575	7.01E+04	2.675	1.88E+03
525	2.36E+04	1.625	9.90E+02	2.725	9.38E+01
575	2.52E+04	1.675	7.73E+04	2.775	1.67E+03
625	2.44E+06	1.725	1.52E+05	2.825	1.30E+02
675	9.19E+04	1.775	8.47E+05	2.875	8.47E+02
725	8.81E+04	1.825	1.34E+05	2.925	1.02E+03
775	3.48E+05	1.875	2.94E+04	2.975	1.31E+03
825	1.14E+05	1.925	2.71E+03	3.025	0.00E+00
875	0.00E+00	1.975	2.87E+02	3.075	1.45E+03
925	1.76E+05	2.025	3.77E+03	3.125	1.02E+02
975	0.00E+00	2.075	7.21E+03	3.175	1.05E+02
1.025	0.00E+00	2.125	6.95E+04	3.225	1.04E+01
1.075	0.00E+00	2.175	3.44E+03	3.275	5.23E+00
				3.325	0.00E+00

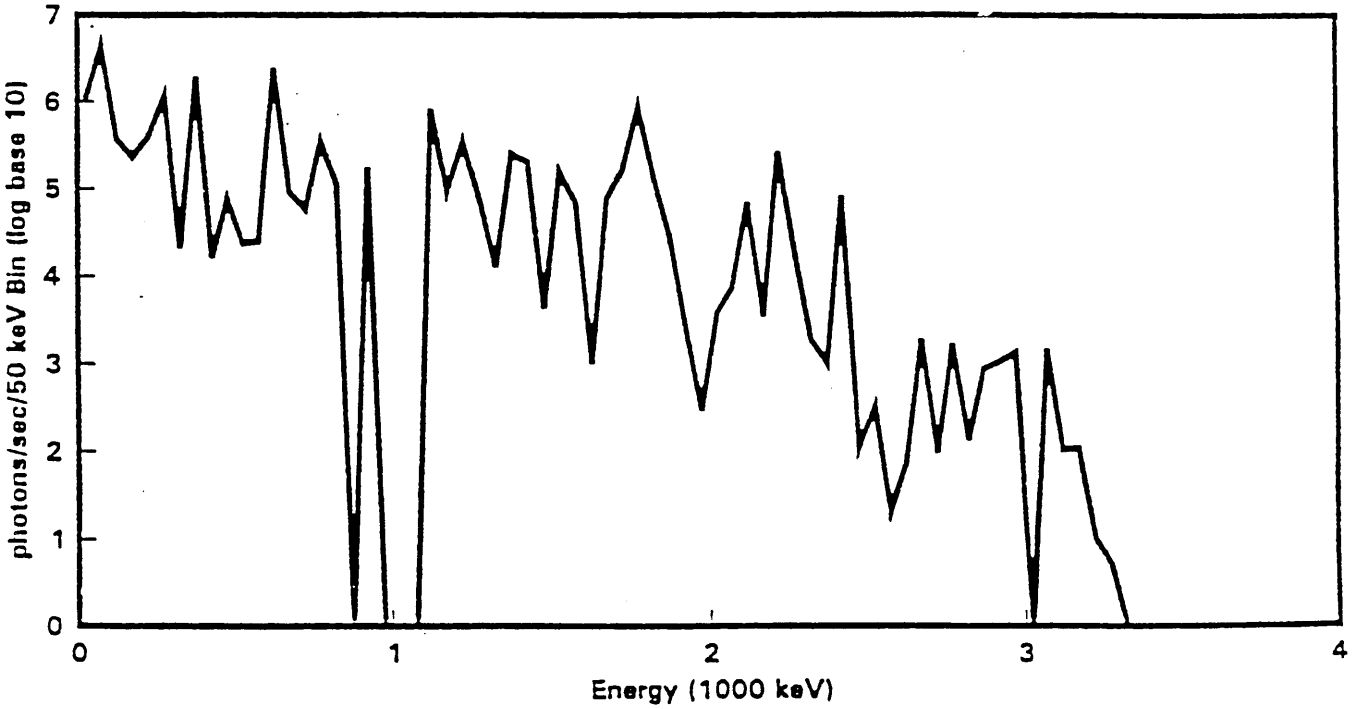


Figure 4-13. Gamma spectrum of Th-230 parent at 15 years post purification.

Table 4-32. Tabular data for gamma spectrum of Th-232 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.74E+03	725	4.37E+01	1,425	2.00E+00
75	4.28E+02	775	2.66E+02	1,475	7.49E+01
125	2.10E+02	825	1.17E+02	1,525	2.65E+01
175	5.20E+01	875	1.06E+01	1,575	1.59E+02
225	3.25E+02	925	1.04E+03	1,625	9.74E+01
275	1.45E+02	975	8.36E+02	1,675	1.28E+01
325	5.95E+02	1,025	1.01E+01	1,725	5.24E+00
375	4.95E+00	1,075	1.15E+01	1,775	2.08E+00
425	8.47E+01	1,125	1.69E+01	1,825	4.83E+00
475	1.72E+02	1,175	9.11E+00	1,875	4.99E+00
525	4.14E+01	1,225	2.54E+01	1,925	2.64E+00
575	1.07E+02	1,275	4.79E+00	1,975	3.31E+00
625	1.44E+01	1,325	1.91E+00	2,025	0.00E+00
675	4.13E+01	1,375	1.69E+00		

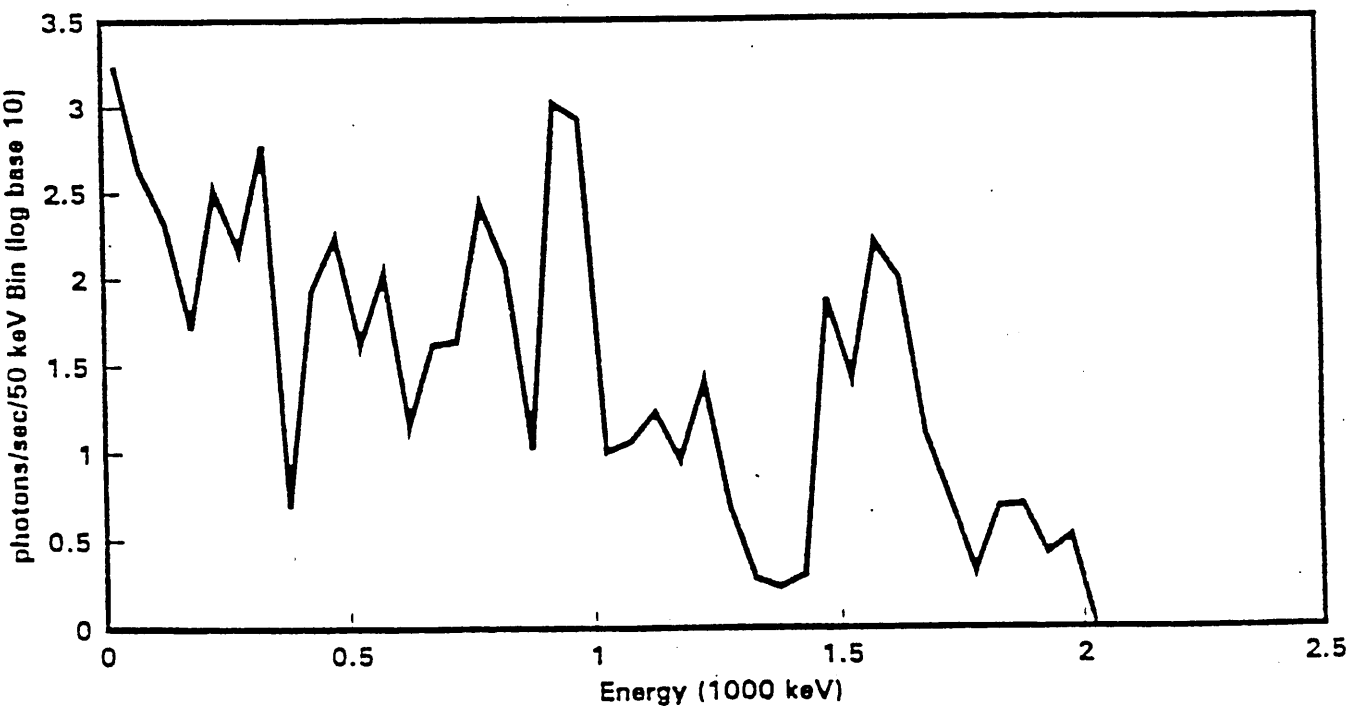


Figure 4-14. Gamma spectrum of Th-232 parent at 15 years post purification.

Table 4-33. Tabular data for gamma spectrum of U-233 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	2.50E+07	625	8.20E+00
75	3.82E+05	675	1.07E+01
125	1.53E+05	725	9.80E+00
175	8.26E+04	775	0.00E+00
225	1.40E+05	825	0.00E+00
275	3.47E+04	875	7.40E+00
325	4.41E+04	925	0.00E+00
375	4.12E+03	975	0.00E+00
425	8.27E+02	1,025	2.94E+01
475	8.80E+02	1,075	0.00E+00
525	1.31E+02	1,125	2.94E+01
575	3.12E+01	1,175	0.00E+00

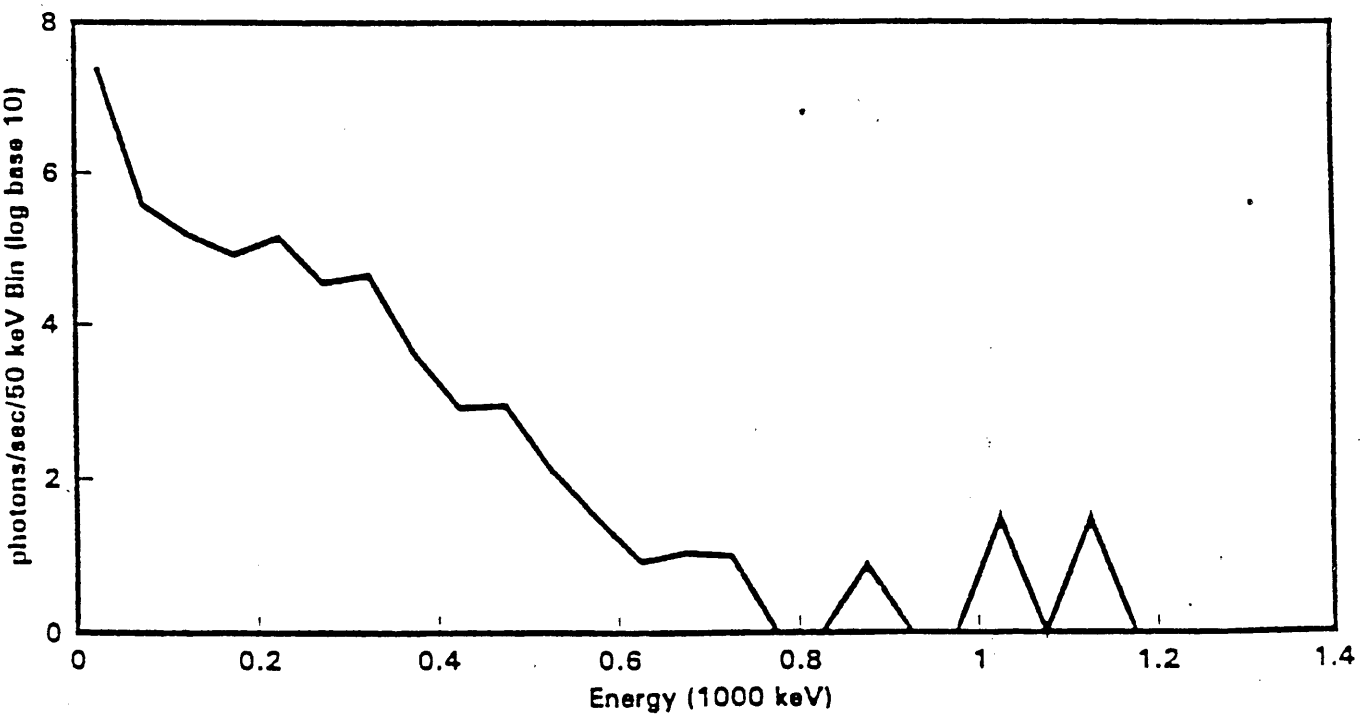


Figure 4-15. Gamma spectrum of U-233 parent at 15 years post purification.

Table 4-34. Tabular data for gamma spectrum of U-235 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.24E+05	575	5.03E-03
75	1.62E+04	625	1.62E-04
125	1.32E+04	675	5.27E-06
175	5.12E+04	725	3.20E-01
225	5.16E+03	775	4.80E-01
275	6.61E+01	825	4.15E-04
325	4.60E+01	875	4.60E-05
375	6.66E+01	925	1.18E-04
425	3.30E+00	975	9.16E-06
475	6.40E+00	1,025	2.63E-22
525	3.25E-01	1,075	0.00E+00

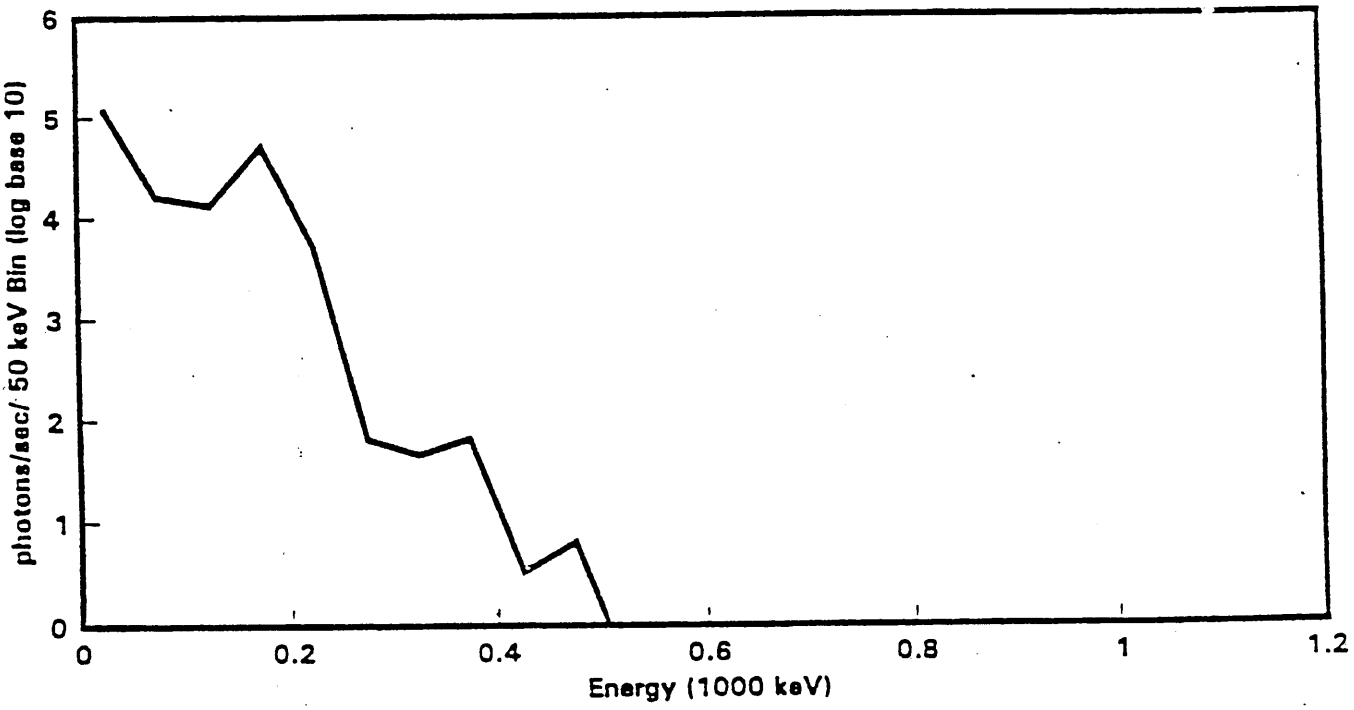


Figure 4-16. Gamma spectrum of U-235 parent at 15 years post purification.

Table 4-35. Tabular data for gamma spectrum of U-238 parent at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.63E+04	725	1.95E+03	1,425	7.59E+01
75	7.46E+03	775	1.39E+03	1,475	1.90E+02
125	4.49E+03	825	2.26E+03	1,525	6.32E+01
175	1.44E+03	875	4.22E+03	1,575	1.29E+02
225	2.22E+03	925	5.04E+03	1,625	6.96E+01
275	7.52E+02	975	1.14E+03	1,675	2.53E+02
325	1.95E+02	1,025	2.39E+02	1,725	2.79E+01
375	6.07E+02	1,075	1.26E+02	1,775	9.61E+01
425	1.56E+02	1,125	2.02E+02	1,825	1.14E+01
475	4.53E+02	1,175	6.82E+01	1,875	5.81E+01
525	6.77E+02	1,225	1.86E+02	1,925	1.05E+02
575	2.31E+03	1,275	1.39E+02	1,975	5.06E-01
625	6.19E+02	1,325	0.00E+00	2,025	0.00E+00
675	1.73E+03	1,375	6.38E-02		

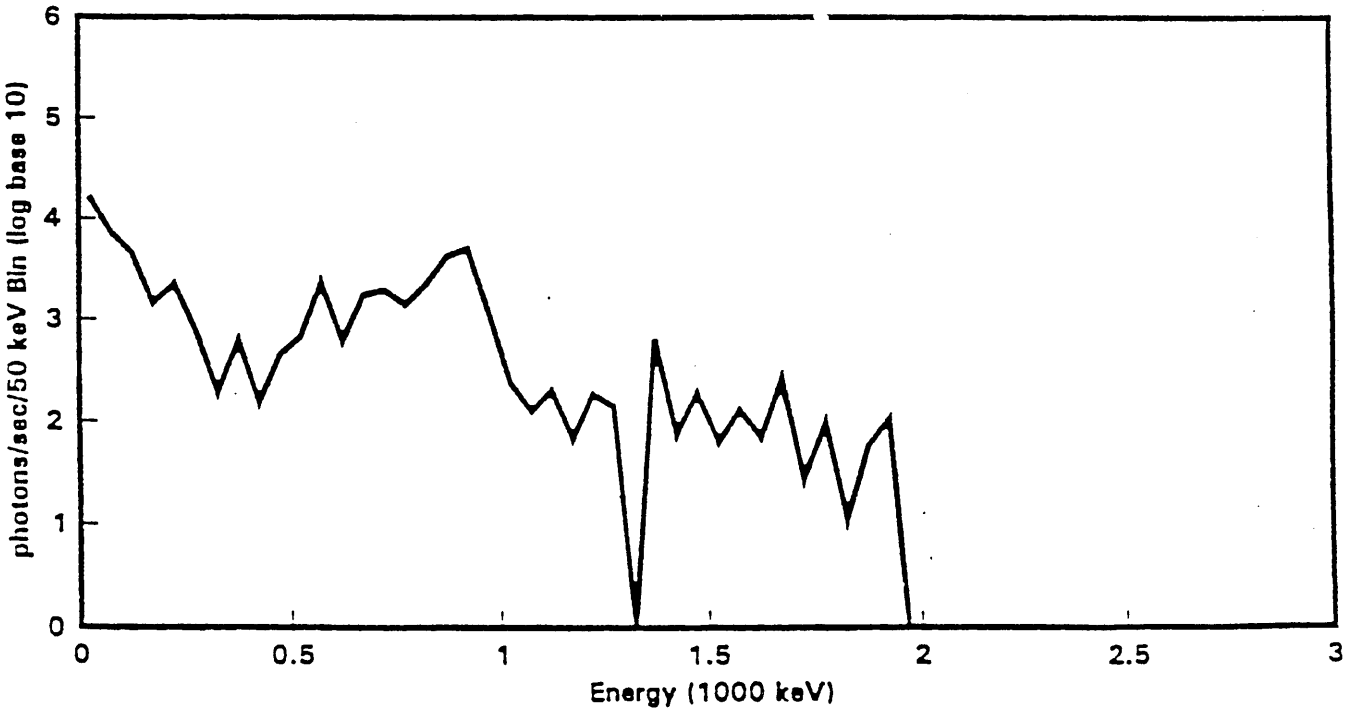


Figure 4-17. Gamma spectrum of U-238 parent at 15 years post purification.

Table 4-36. Tabular data for gamma spectrum of heat source plutonium at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	5.13E+10	925	8.38E+03	1,825	9.22E-02
75	1.29E+08	975	1.70E+03	1,875	0.00E+00
125	5.37E+06	1,025	7.79E+03	1,925	0.00E+00
175	4.41E+06	1,075	6.17E+03	1,975	0.00E+00
225	4.31E+05	1,125	1.36E-09	2,025	0.00E+00
275	2.37E+04	1,175	7.89E+01	2,075	0.00E+00
325	3.42E+04	1,225	0.00E+00	2,125	0.00E+00
375	1.06E+04	1,275	1.47E+02	2,175	0.00E+00
425	5.47E+03	1,325	0.00E+00	2,225	0.00E+00
475	8.37E+02	1,375	1.97E+01	2,275	0.00E+00
525	6.45E+04	1,425	0.00E+00	2,325	0.00E+00
575	1.24E+04	1,475	0.00E+00	2,375	0.00E+00
625	3.29E+02	1,525	2.54E+03	2,425	0.00E+00
675	1.31E+03	1,575	0.00E+00	2,475	0.00E+00
725	9.15E+04	1,625	1.14E+04	2,525	0.00E+00
775	1.91E+05	1,675	6.16E+02	2,575	0.00E+00
825	5.92E+03	1,725	5.63E+00	2,625	2.93E+05
875	5.39E+04	1,775	0.00E+00	2,650	0.00E+00

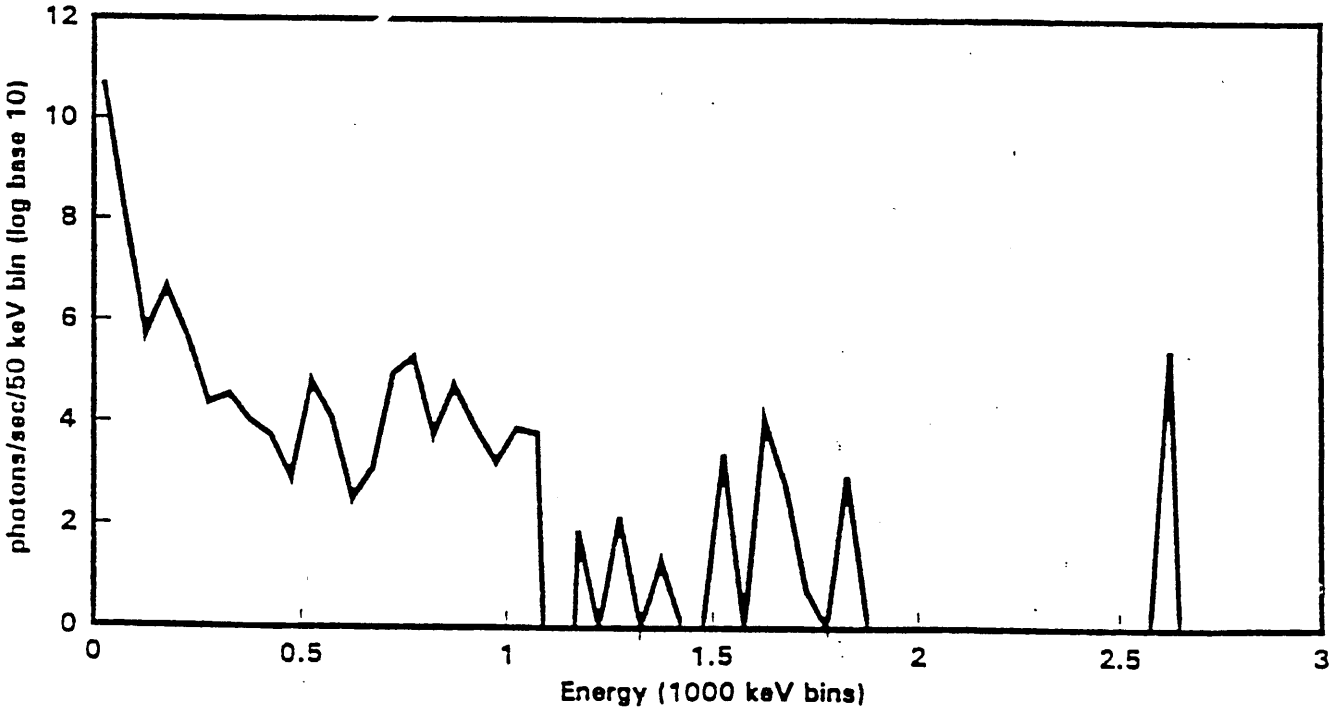


Figure 4-18. Gamma spectrum of heat source plutonium at 15 years post purification.

Table 4-37. Tabular data for gamma spectrum of weapons grade plutonium at 15 years post purification.

Bin Midpoint keV	Gamma Emission photons/sec-g	Bin Midpoint keV	Gamma Emission photons/sec-g
25	1.10E+08	675	1.56E+03
75	8.86E+07	725	6.89E+02
125	4.37E+05	775	4.16E+02
175	1.83E+04	825	2.18E+01
225	4.96E+04	875	1.30E+01
275	4.90E+03	925	4.03E+00
325	3.54E+04	975	2.66E+00
375	6.30E+04	1,025	1.38E+00
425	3.53E+04	1,075	1.04E+00
475	4.33E+03	1,125	1.49E-09
525	2.13E+02	1,175	0.00E+00
575	8.14E+01	1,225	0.00E+00
625	9.69E+02		

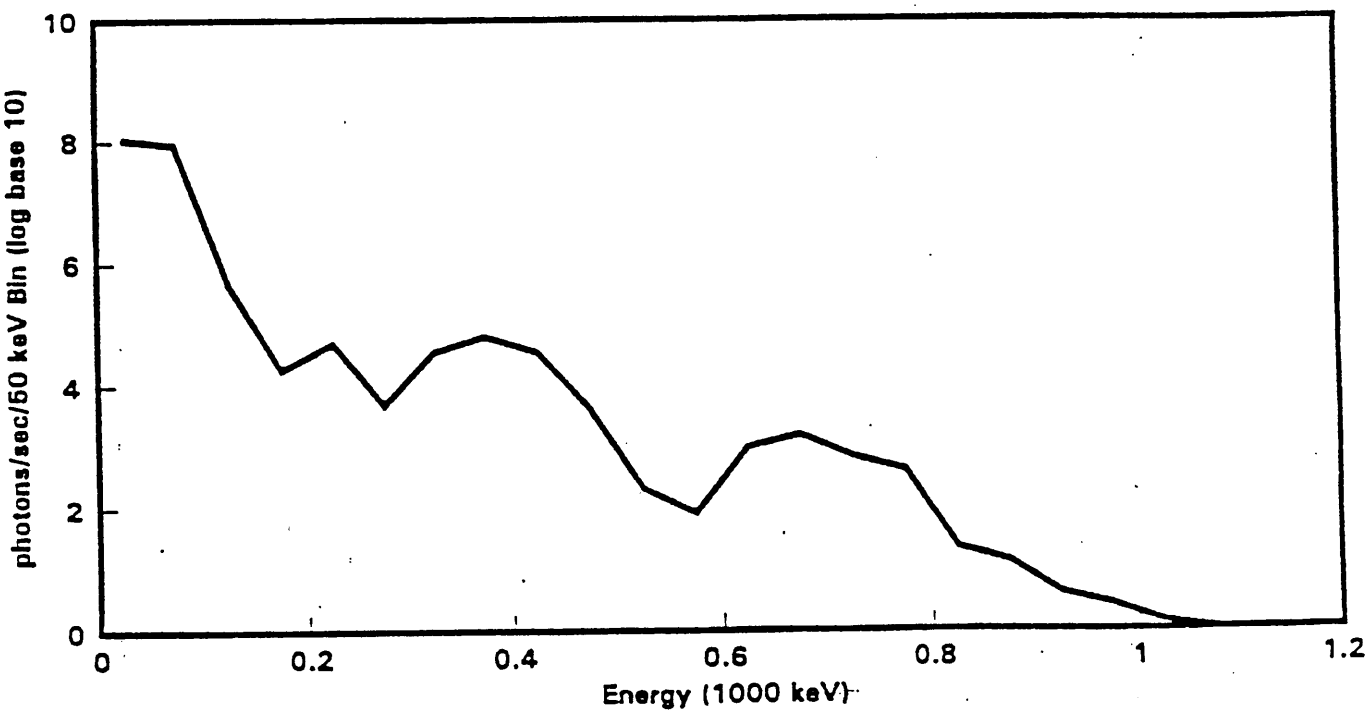


Figure 4-19. Gamma spectrum of weapons grade plutonium at 15 years post purification.

4.1.4 Neutron Data

Neutrons are generated in plutonium-bearing wastes from the spontaneous fission of the even-numbered plutonium isotopes and from interactions of the alpha decay particles with light elements in the waste matrix, i.e., (α,n) reactions. The number of neutrons generated per gram of waste-entrained plutonium therefore depends on both the isotopic composition of the plutonium and its chemical form. This condition complicates any effort to characterize the neutron source term since it is in most cases impossible to reliably know the plutonium chemical compounds existing in a given waste container sufficient to calculate a neutron source term. For this reason an alternate method has been devised with the intent of providing some bounds on the expected neutron source term. The information provided in this section is based on work by East (1993-1994).[l,m]

The method is based on the evaluation of a database containing neutron measurement data on approximately 12,000 drums of RFP-generated waste acquired at the SWEPP waste examination facility.[m] The resulting average neutron source term estimates are tabulated as a function of waste category, i.e., content code. The data is necessarily presented in this manner since the waste process generating a given content code is expected to contain similar plutonium chemical compounds, which in turn should have a similar neutron source term in units of neutrons/sec/gram-plutonium. In addition to the database analysis, calculations are performed to independently estimate the neutron source term based on tabulated neutron yields for the various plutonium and nonplutonium isotopes as a function of chemical form. This data is used to substantiate and to some extent validate the results obtained from the database analysis. The result of the above neutron source term estimation method is that it is dependent upon a waste form type. Therefore subsequent use of such data must be qualified relative to the waste form for which it has been specified. The calculational method is presented first, followed by the results of the neutron measurement database analysis.

4.1.4.1 Calculational Method. To support the calculational method, discussion is required on the origin of neutrons emitted from TRU waste. Additionally, estimates are made of the various radionuclidic and waste chemical forms such that neutron yields can be calculated.

Fast neutrons are emitted by plutonium as the result of the following processes:

- Spontaneous fissioning of the even-numbered isotopes (i.e., ^{238}Pu, ^{240}Pu, and ^{242}Pu)
- Nuclear reactions induced by alpha particles from radioactive decay with light elements (Al, O, F, etc.) in intimate contact with the plutonium [(α,n) reactions]
- Fissions produced by the exposure of the odd-numbered isotopes (principally ^{239}Pu) to thermal neutrons.

For most TRU waste forms containing plutonium, a negligible number of neutrons are produced from fissions induced by the neutrons resulting from radioactive decay (e.g., very little neutron multiplication will

---

l. L. V. East, *Neutron Source Terms for Rocky Flats Generated Waste at the INEL*, RWMC EDF-694, January 7, 1994.

m. L. V. East, *SWEPP Passive-Active Neutron Assay Database Description*, RWMC EDF-688, December 13, 1993.

occur). Therefore the primary sources of neutrons from waste are spontaneous fission and (α,n) reactions. Table 4-38 lists the spontaneous fission neutron yields for nonmultiplying samples, and neutron yields from (α,n) reactions for common plutonium chemical compounds. Yields from ^{241}Am are included in this table since this nuclide results from the radioactive decay of ^{241}Pu and is always present in plutonium-bearing waste.

As can be seen from Table 4-38, not only does the neutron emission rate per gram of source material depend on the isotopic composition, but it also is highly dependent on the chemical form due to the vastly different (α,n) yields of different elements. It also depends on the age of the material due to the build-up of ^{241}Am from the decay of ^{241}Pu (14.4 year half-life). Table 4-39 lists the expected neutron yields for some common isotopic compositions and chemical forms. Note that elevated concentrations of ^{241}Am will significantly increase the neutron output from oxides, fluorides, etc. but not from pure metals.

Tables 4-38 and 4-39 are provided to illustrate the nominal neutron emission rates expected per gram of isotope. The Table 4-39 WG Pu values for 90% PuO_2/10% PuF_4 and PuO_2 on glass were calculated based on waste form source configuration estimates.[4-3] As it will be shown, these values should be and are reasonably close to applicable neutron source term values as derived from the neutron measurement database analysis addressed in the next section.

Tabulated uranium neutron yields are provided as several uranium isotopes are identified in Table 4-5. As the RFP-generated waste is comprised primarily of WG Pu, there is no database of uranium mass measurements for comparison. Uranium will produce neutrons by the same mechanisms as plutonium; spontaneous fission, (α,n) reactions on light elements, and thermal neutron induced fission (the latter can, in most cases, be ignored unless there is a strong external source of neutrons present). With the exception of light element compounds containing significant quantities of the lighter uranium isotopes (232–234), neutron emission from uranium-bearing waste is generally insignificant. However, kilogram quantities of uranium will produce measurable neutron emissions for all enrichments (15 to 40 n/sec/kg for oxides and nitrates, 700 to 3000 n/sec/kg for fluorides).[4-4] Neutron yields[4-4] from uranium isotopes and their most common chemical compounds (UO_2 and UF_6) are shown in Table 4-40.

Other nuclides that may be present in retrievably-stored wastes (Table 4-5) may also produce neutron emissions, either by spontaneous fission or (α,n) reactions. The emission rates for the most important nonuranium and nonplutonium nuclides are listed in Table 4-41.

4.1.4.2 Neutron Measurement Database Analysis. A database containing information from the SWEPP passive/active neutron (PAN) drum assay system was used to calculate actual average neutron emission rates for many of the retrievably-stored RFP waste categories.[n]

n. L. V. East, *SWEPP Passive-Active Neutron Assay Database Description,* RWMC EDF-688, December 13, 1993.

Table 4-38. Neutron yields for plutonium isotopes and ^{241}Am.[a]

	Neutron yields (n/sec/gm of isotope)				
		(α,n) reactions[b]			
Isotope	Spontaneous fission	Oxygen	Fluorine	Beryllium	Boron
^{238}Pu	2.5×10^{3}	1.5×10^{4}	2.8×10^{6}	2.5×10^{7}	5.4×10^{6}
^{239}Pu	2.3×10^{-2}	4.5×10^{1}	6.9×10^{3}	7.4×10^{4}	3.1×10^{4}
^{240}Pu	9.9×10^{2}	1.5×10^{2}	2.5×10^{4}	2.7×10^{5}	6.0×10^{4}
^{241}Pu	$\sim 5 \times 10^{-2}$	1.4	2.1×10^{2}	2.5×10^{3}	6.1×10^{2}
^{242}Pu	1.7×10^{3}	2.1	3.3×10^{2}	3.9×10^{3}	9.5×10^{2}
^{241}Am	~1.3	2.7×10^{3}	5.5×10^{5}	3.5×10^{6}	7.6×10^{5}

a. EDF RWMC-694, 1/7/94.

b. Thin targets are assumed for oxygen and fluorine with atom ratios of two (PuO_2) and four (PuF_4), respectively. The beryllium and boron values are based on thick target yields from Reference 4-4.

Table 4-39. Representative neutron yields per gram Pu.[a]

	Neutron yields (n/sec/gm-Pu)			
Material	Pure metal[b]	Oxide (PuO_2)	90% PuO_2, 10% PuF_4	PuO_2 on glass[c]
WG Pu[d]	6.2×10^{1}	1.2×10^{2}	1.1×10^{3}	1.6×10^{3}
WG Pu with 50 wt% ^{241}Am	6.4×10^{1}	3.0×10^{3}	6.2×10^{4}	3.8×10^{4}
Med Burnup Pu[e]	1.4×10^{2}	2.4×10^{2}	2.0×10^{3}	2.4×10^{3}
Heat Source Pu[f]	1.5×10^{4}	1.1×10^{5}	1.8×10^{6}	2.8×10^{6}

a. EDF RWMC-694, 1/7/94.

b. No significant neutron multiplication present.

c. Boro-silicate glass composed of 12% B_2O_3 (natural boron) and 88% SiO_2. 50% of the thick target yields[4-3] were used for the B, O and Si contained in the glass.

d. "Weapons grade" (low burnup) plutonium; ~94% ^{239}Pu, 6% ^{240}Pu fifteen years after chemical purification.

e. Moderate burnup (~12 MWD/t) plutonium; ~87% ^{239}Pu, 12% ^{240}Pu fifteen years after chemical purification.

f. Approximately 85% ^{238}Pu, 15% ^{239}Pu, fifteen years after chemical purification.

Table 4-40. Neutron yields for uranium isotopes.[a]

Isotope	Yields (n/sec/gm-isotope)		
	Spontaneous fission	(α,n) reactions	
		UO_2	UF_6
^{232}U	1.7	1.7×10^{4}	3.6×10^{6}
^{233}U	$<4.0 \times 10^{-4}$	4.7	7.9×10^{2}
^{234}U	7.6×10^{-3}	3.0	5.1×10^{2}
^{235}U	1.1×10^{-5}	7.2×10^{-4}	1.0×10^{-1}
^{236}U	4.4×10^{-3}	2.4×10^{-2}	3.3
^{238}U	1.4×10^{-2}	8.5×10^{-5}	1.1×10^{-2}

a. EDF RWMC-694, 1/7/94.

Note: ^{237}U is not included in Table 4-40 since its beta decay does not give rise to neutron emissions.

Table 4-41. Neutron yields for other nuclides.[a]

Isotope	Yields (n/sec/gm-isotope)		
	Spontaneous fission	(α,n) reactions	
		Oxygen	Fluorine
^{226}Ra	0	$\sim 4.5 \times 10^{2}$	$\sim 7.5 \times 10^{4}$
^{230}Th	0	~8	$\sim 1.5 \times 10^{3}$
^{232}Th	0	$<5 \times 10^{-5}$	$<8 \times 10^{-2}$
^{237}Np	0	~0.4	~50
^{243}Am	~4	$\sim 1.4 \times 10^{2}$	$\sim 2.5 \times 10^{2}$
^{242}Cm	2.3×10^{7}	4.2×10^{6}	9.2×10^{8}
^{244}Cm	1.1×10^{7}	8.5×10^{4}	1.8×10^{7}
^{252}Cf	2.3×10^{12}	6.9×10^{5}	1.5×10^{8}

a. EDF RWMC-694, 1/7/94.

The number of neutrons emitted per second by an individual drum was calculated from:

$$N_r = (T_r - B_{avg}) / \epsilon_n$$

where

T_r = Summed (total) count-rate from all neutron detectors in the drum assay system

B_{avg} = Average background rate determined from approximately 100 background measurements (28.13 counts/sec)

ϵ_n = Measured total neutron detection efficiency of the drum assay neutron counters (0.1263).[o]

Note that no matrix corrections (for neutron absorption, etc.) have been applied.

The neutron emission rate value is next divided by the Pu mass to obtain the neutron source term in units of neutrons/second-gram Pu. Three mass values are available in the database:

- As declared by the waste generator (RFP)
- As determined by the SWEPP drum assay system in active mode
- As determined by the SWEPP drum assay system in passive mode.

Neutron emission rates were then obtained for each waste drum by dividing N_r by each of the three available masses. These values were then sorted and averaged for each waste category (content code) available in the sample set. The results are shown in Table 4-42 for each category in which at least five reliable mass measurements were obtained. The column labeled "Sample Size" gives the number of drums in each content code used in the average. Two average emission rates are shown for each waste category, one using generator RFP declared WG Pu mass values (labeled "RFP Mass") and the other (labeled "PAN Mass") based on SWEPP measurements; active neutron measurement mode results for sludges and passive neutron mode results are given for all other waste categories.

The values shown in Table 4-42 are consistent with the calculated values shown in the first two rows of Table 4-39, which are representative of source configurations of actual waste categories. There is also reasonable agreement (within a factor of two) between most emission rates based on RFP-supplied mass values and SWEPP-derived mass values; the most notable exception is the sludge content code 4 for which an order-of-magnitude difference exists.

---

o. G. K. Becker, *Pink Drum Calibration and Verification Calculations for FTC-CF-7284 Californium Source*, RWMC-EDF-547, May 1992.

Table 4-42. Average retrievably-stored waste neutron emission rates.[a]

Content code	Sample size	Average (n/sec/gm-Pu) RFP mass	Average (n/sec/gm-Pu) PAN mass	Waste description
1	1393	9.4×10^3	7.4×10^3	First-stage sludge
2	28	3.8×10^3	1.3×10^3	Second-stage sludge
3	71	9.7×10^2	8.2×10^2	Organic setups, oil solids
4	123	3.2×10^3	4.4×10^2	Special setups (cemented)
7	361	2.4×10^3	8.4×10^2	Dry (cemented) sludge
111	22	1.1×10^3	5.3×10^2	Inorganic solids and wet sludges
115	10	2.2×10^2	2.1×10^2	Graphite waste
123	8	2.5×10^2	3.6×10^2	Leaded rubber
292	110	2.7×10^2	4.6×10^2	Cemented sludge
300	503	3.2×10^2	3.1×10^2	Graphite molds
303	18	1.7×10^2	2.2×10^2	Scarfed graphite chunks
320	51	6.0×10^2	1.1×10^3	Heavy non-SS metals (tantalum)
330	33	8.6×10^2	3.3×10^3	Dry paper and rags
335	7	1.1×10^3	2.0×10^3	Absolute 8 × 8 filters
336	46	7.9×10^2	1.1×10^3	Moist paper and rags
337	75	1.8×10^3	1.5×10^3	Plastics, Teflon, PVC
338	14	1.3×10^3	2.9×10^3	Insulation and CWS filter media
339	28	2.4×10^2	4.7×10^2	Leaded rubber gloves and aprons
371	30	4.2×10^2	6.8×10^2	Firebrick
374	5	1.3×10^3	5.1×10^2	Blacktop, concrete, dirt and sand
376	556	1.1×10^3	1.7×10^3	Cemented insulation/filter media
414	5	4.4×10^2	4.9×10^2	Direct oxide reduction salts
432	53	1.5×10^2	4.8×10^2	Leached and cemented resin
440	153	7.2×10^2	1.1×10^3	Glass
442	119	8.0×10^2	1.7×10^3	Leached Raschig rings
480	204	7.8×10^2	1.0×10^3	Unleached light non-SS metal
481	28	7.4×10^2	7.7×10^2	Leached light non-SS metal

a. EDF RWMC-694, 1/7/94.

The high average neutron rates for content code 1 waste can be attributed to the high ^{241}Am content of many of these waste drums. Many process residues (sludges) also contain significant amounts of light elements other than oxygen (B, Cl, F, etc.) in intimate contact with TRU alpha emitters resulting in elevated (α,n) production levels.

For RFP waste categories not covered in this sampling, a nominal upper limit of ~ 10^4 neutrons per second per gram of Pu is considered to be a safe assumption. The neutron emission rates for most wastes containing combustibles, metal scrap, etc. can be reasonably expected to lie in the range 2×10^2 to 2×10^3.

4.2 Information Derived via RWMIS Analysis

The Radioactive Waste Management Information System (RWMIS) database is believed to contain the most accurate information on the total volume of waste stored at the TSA. This database contains information on many radionuclides, however, it reports information at the shipment level. The information provided in this section is based on work by Atwood and Schlafman (1993)[4-5] and Morrell (1995).[p]

Table 4-43 presents RWMIS derived nuclide information by shipment, volume and activity (decayed to December 1993).

RWMIS data was also analyzed for non-actinide activity for the categories of contact handled alpha low-level waste (CH-ALLW) and transuranic waste (CH-TRUW), and remote handled alpha low-level waste (RH-ALLW) and transuranic waste (RH-TRUW). The methods used for this analysis were to:

- Obtain shipment records from the RWMIS database for the TSA waste
- Separate into CH and RH shipment records by listed storage location, use ILTSF for known remote handled waste, and the rest as CH waste.
- Separate CH and RH shipment records by transuranic activity in terms of TRU nCi/g
    - use activity from DOE TRU defined nuclides; atomic number >92, half life > 20 years
    - use grams from shipment total weight
    - average nCi of shipment activity across entire weight of shipment
- Add up non-actinides per shipment
- Add up non-actinides per category
    - ALLW CH & RH
    - TRUW CH & RH.

Tables 4-44 and 4-45 summarize the non-actinide activity for the contact handled ALLW and TRUW, Tables 4-46 and 4-47 summarize the non-actinide activity for the known remote handled ALLW and TRUW stored at the ILTSF.

---

p. D. K. Morrell, *RWMIS Non-Actinides Summary*, EDF PSPI-015546-07, September 29, 1995.

Table 4-43. Nuclide summary by shipment, volume, and decayed activity.[a]

	Shipments	Volume of shipments (m^3)	Decayed activity to 2/17/93 (Ci)
Total	19521	64,746	372200.
TRU	19086	64,227	200600.
Non-TRU	19107	64,598	171600.
α-emitters	19168	64,658	202200.
β/γ-	18814	63,542	170000.
Fissionable	19166	64,657	353300.
	By nuclide		
Nuclide			
Ac-277	1	0.21	0.04079
Am-241	18488	62,105	89780.
Am-242m	2	0.28	0.0003001
Am-243	22	175.41	0.3799
Ba-137m	459	1,452.0	2246.
Bi-212	54	395.0	26.55
Bi-214	0	.0	0.00000000000
Bk-249	4	64.5	0.0005709
C-14	2	40.8	0.00004225
Ce-144	45	11.3	27.06
Cf-249	4	44.4	0 009729
Cf-252	9	116.1	0.004077
Cm-242	2	27.2	0.000001436
Cm-243	2	0.3	0.01531
Cm-244	15	138.0	539.0
Cm-246	3	41.8	0.001530
Cm-248	1	20.4	0.00000004170
Co-58	7	1.0	0.0000001101
Co-60	19	24.0	94.30
Cr-51	0	0	0.00000000000
Cs-134	34	9.3	110.7
Cs-137	167	173.7	2003.
Eu-150	0	0	0.00000000000
Eu-152	9	129.5	0.06756
Eu-154	15	114.3	0.7104
Eu-155	10	5.8	0.1863
Fe-55	4	41.0	1.132
Fe-59	0	0	0.00000000000
H-3	5	151.8	0.7978
Kr-85	2	0.3	6.857

Table 4-43. (continued).

	Shipments	Volume of shipments (m^3)	Decayed activity to 2/17/93 (Ci)
MAP[b]	36	290.6	1.280
MFP[c]	304	1,322.4	483.3
Mn-54	26	4.3	0.2287
Nb-95	0	0	0.00000000000
Ni-63	3	20.7	3.572
Np-237	38	368.8	0.3552
Pa-233	0	0	0.00000000000
Pb-210	1	0.2	0.01756
Pb-212	54	394.7	26.55
Pb-214	0	0	0.00000000000
Pm-147	3	0.5	27.26
Po-212	54	394.7	17.01
Po-214	0	0	0.00000000000
Po-216	54	394.7	26.55
Po-218	0	0	0.00000000000
Pr-144	45	11.3	27.18
Pu-236	299	213.5	0.01479
Pu-238	18400	62,764.7	60800.
Pu-239	19059	64,219.7	40150.
Pu-240	18881	62,665.5	9825.
Pu-241	18386	61,736.1	161100.
Pu-242	18329	61,766.6	0.9451
Ra-224	54	394.6	26.55
Ra-226	2	0.4	0.04790
Ra-228	1	0.2	0.03062
Rh-106	0	0	0.00000000000
Rn-220	54	394.7	26.55
Rn-222	0	0	0.00000000000
Ru-106	13	7.1	0.1865
Sb-125	11	5.9	1.647
Sr-90	32	8.9	1778.
Ta-182	1	0.1	0.00001548
Tc-99	3	24.0	0.001760
Th-228	54	394.7	26.55
Th-230	1	20.4	0.01998
Th-232	105	717.2	0.3301
Th-234	0	0	0.00000000000

Table 4-43. (continued).

	Shipments	Volume of shipments (m^3)	Decayed activity to 2/17/93 (Ci)
Tl-208	54	394.7	9.540
U-228	0	0	0.00000000000
U-232	54	394.7	26.04
U-233	152	1,585.7	898.5
U-234	18410	63,005.0	5.778
U-325	1107	8,808.3	0.06669
U-236	31	285.1	0.001199
U-238	331	919.7	0.1171
Unid β/γ[d]	6	1.3	12.44
Y-90	334	1,331.0	2019.
Zn-65	2	40.8	0.00000001868
Zr-95	8	1.6	0.00000000234
	By location		
Location[e]			
TSA			
Total	19179	64,669	363700.
TRU	18744	64,150	200500.
Non-TRU	18771	64,552	163200.
ILTSF			
Total	342	77.2	8489.
TRU	342	77.2	100.3
Non-TRU	336	75.8	8388.
	By waste generator		
Generator			
ALE	407	1,531.0	6002.
ANL	227	43.3	6812.
ARA	4	10.1	11.94
BCL	13	214.4	120.6
BEN	1	0.2	18.48
BET	78	433.2	1586.
CFA	2	0.2	0.04360
CPP	29	48.7	1330.
D+D	1	0.2	2.488
LOF	1	0.2	1.189
MRC	446	3,895.4	61000.
NRF	37	7.0	428.5
RFO	17960	54,167.8	280500.

Table 4-43. (continued).

	Shipments	Volume of shipments (m^3)	Decayed activity to 2/17/93 (Ci)
TAN	5	0.9	16.00
TRA	42	10.1	836.7
WMC	268	4,383.5	13480.

a. The activities are rounded off to four significant digits, EGG-RAAM-10741, April 1993.

b. "Mixed Activation Products, " treated as C0-60.

c. "Mixed Fission Products," treated as a mixture of half Cs-137 and half Sr-90.

d. "Unidentified β/γ-emitters," treated as Cs-137.

e. The locations given as text in the data base are the Transuranic Storage Area (TSA), and the Intermediate Level Transuranic Storage Facility (ILTSF). ILTSF is the designated location for all remote-handled waste. In this table, the designation TSA therefore means all of the Transuranic Storage Area except ILTSF. Locations outside of the Transuranic Storage Area, such as Pad A and the Burial Ground Pit Air Support Building, are not considered here.

Table 4-44. Contact handled ALLW non-actinide activity.[a]

Generator	Number of shipments	TRU actinides	nCi TRU actinide/ gram of waste	Non-actinide	Non-actinide activity (Ci)
ALE	14	Np-237	<=100	Eu-150	4.50e-05
		Pu-238		Eu-152	4.80e-04
		Pu-239		Eu-154	3.00e-06
		Pu-240			
		Am-241			
		Cm-246			
ANL	5	Np-237	<=100	Cr-51	1.45
		Pu-239		Mn-54	0.14
		Pu-240		Co-58	0.15
				Co-60	2.80
				Sr-90	0.30
				Cs-137	0.42
				Ce-144	0.42
				MAP[b]	0.58
				MFP[c]	0.45
BET, ANL	No non-actinides were reported in the BETANL waste.				
CPP	No non-actinides were reported in the CPP waste.				
NRF	3	Pu-238	<=100	Cs-137	2.47
		Pu-239		MFP	4.47
		Pu-240			
		Pu-242			
TRA	2	Pu-239	<=100	Eu-152	0.34
				Total:	13.99

a. EDF PSPI-015546-07, 9/29/95.

b. Mixed activation products (MAP) treated as C0-60.

c. Mixed fission products (MFP) treated as a mixture of half Cs-137 and half Sr-90.

Table 4-45. Contact handled TRUW non-actinide activity.[a]

Generator	Number of shipments	TRU actinides	nCi TRU actinide/ gram of waste	Non-actinide	Non-actinide activity (Ci)
ALE	58	Np-237	>100	H-3	2.20e-02
		Pu-238		C-14	4.23e-05
		Pu-239		Fe-55	6.11e-04
		Pu-240		Co-60	5.00e-04
		Pu-242		Ni-63	1.00e-04
		Am-241		Zn-65	1.10e-03
		Cm-246		Tc-99	3.70e-04
				Cs-137	1.08
				Eu-152	1.09e-03
				Eu-154	7.90e-05
				MFP[b]	142.52
ANL	37	Pu-239	>100	Co-58	0.68
		Pu-240		Co-60	3.40
		Pu-242		Ru-106	9.90e-04
				Cs-134	1.24e-04
				Cs-137	3.00
				Ce-144	5.69e-04
				Eu-155	2.99e-05
				MAP[c]	1.17
				MFP	2.48
				UN-ID-B+G	1.40
BET, ANL	No non-actinides were reported in the BETANL waste.				
CPP	No non-actinides were reported in the CPP waste.				
NRF	1	Pu-238	>100	MFP	4.20
		Pu-239			
		Pu-240			
		Pu-242			
TRA	6	Pu-238	>100	Co-60	185.80
		Pu-239		Zr-95	66.8
		Pu-240		Tc-99	2.80e-03
		Pu-242		Cs-137	65.30
		Am-241		Ce-144	8.60
		Am-243		Pm-147	928.00
				UN-ID-B+G	13.49
				Total	1,427.95

a. EDF PSPI-015546-07, 9/29/95.

b. Mixed fission products (MFP) treated as a mixture of half Cs-137 and half Sr-90.

c. Mixed activation products (MAP) treated as Co-60.

Table 4-46. Remote handled ALLW non-actinide activity.[a]

Generator	Number of shipments	TRU actinides	nCi TRU actinide/ gram of waste	Non-actinide	Non-actinide activity (Ci)
ALE	21	Pu-239 Pu-240	<=100	Cs-137	13.98
ANL	3	Pu-239 Pu-240	<=100	Mn-54	7.00
				Co-58	7.00
				Sr-90	2.40
				Cs-134	1.20
				Cs-137	4.40
				Ce-144	7.00
				MFP[b]	1.00
BET, ANL	No non-actinides were reported in the BETANL waste.				
CPP	No non-actinides were reported in the CPP waste.				
NRF	6	Pu-238 Pu-239 Pu-240 Pu-242	<=100	MFP	2.06
TRA	No non-actinides were reported in the TRA waste.				
				Total	46.04

a. EDF PSPI-015546-07, 9/29/95.

b. Mixed fission products (MFP) treated as a mixture of half Cs-137 and half Sr-90.

Table 4-47. Remote handled TRUW non-actinide activity.[a]

Generator	Number of shipments	TRU actinides	nCi TRU actinide/ gram of waste	Non-actinide	Non-actinide activity (Ci)
ALE	245	Np-237	>100	Cs-137	88.97
		Pu-239		MFP[b]	346.98
		Pu-240			
		Am-241			
ANL	29	Np-237	>100	Cr-51	7.01
		Pu-239		Mn-54	108.40
		Pu-240		Co-58	105.44
				Fe-59	5.34
				Co-60	23.86
				Sr-90	1,684.64
				Nb-95	0.72
				Zr-95	0.43
				Ru-106	3.00
				Cs-134	870.97
				Cs-137	1,759.34
				Ce-144	3,863.93
				MAP[c]	4.00
				MFP[b]	6.00
BET, ANL	2	Np-237	>100	Fe-55	3.86
		Pu-238		Co-60	16.78
		Pu-239		Ni-63	3.69
		Pu-240		Kr-85	9.36
		Pu-242		Sr-90	101.75
		Am-241		Y-90	101.75
		Am-242M		Rh-106	1.30
		Am-243		Ru-106	1.30
		Cm-243		Sb-125	5.31
				Cs-134	34.90
				Cs-137	102.31
				Ba-137M	97.33
				Ce-144	15.64
				Pr-144	15.64
				Pm-147	84.13
				Ta-182	0.74
CPP	10	Pu-238	>100	Sr-90	326.55
		Pu-239		Ru-106	101.07
		Pu-240		Sb-125	0.78
		Pu-242		Cs-134	22.55
		Am-241		Cs-137	324.78
				Ce-144	3.89
				Eu-154	1.56
				Eu-155	0.78
NRF	20	Pu-238	>100	MFP[b]	78.45
		Pu-239			
		Pu-240			
		Pu-242			
TRA	No non-actinides were reported in the TRA waste.				
				Total:	10,335.23

a. EDF 015546-07, 9/29/95.

b. Mixed fission products (MFP) treated as a mixture of half Cs-137 and half Sr-90.

c. Mixed activation products (MAP) treated as Co-60.

4.3 Refinement of Nonactinide Nuclide Inventory Using Information from Other Sources

The shipping records and their compilation in the INEL databases often provide incomplete information on the radionuclides in the waste. Several other sources of information were investigated to obtain data on the identity and activity of nonactinide radionuclides. This information is discussed in the following sections. The results are given in terms of the radioactivities that need to be added to the RWMIS derived inventory for each type of waste. Table 4-48 presents a summary refined inventory for these select nuclides. Section 4.3.1, 4.3.2, and 4.3.3 provide additional information on derivation of Table 4-48 values. The information provided in this section is based on work by Morrell (1995),[q] Smith and Raivo (1995).[r]

4.3.1 Tritium

Based on RWMIS data, Atwood and Schlafman[4-5] listed an activity of only 1.95 Ci of tritium (H-3) in the waste stored in the TSA. Radioactive decay had reduced the activity, recorded in 1977, to 0.7978 Ci by 1993. Examination of the RWMIS entry indicates that the waste containing the H-3 is likely to be ALLW, not TRU waste.

As described below, additional H-3, not reported in RWMIS, is estimated to be in the stored waste.

Two incidents at the Rocky Flats Plant resulted in tritium-contaminated waste being sent to the TSA (INEL 1984).[s] Nearly all of the tritium in the stored waste is believed to exist in waste generated during the cleanup and decontamination work stemming from these two incidents.

Information compiled by the INEL[s] in 1984 on the tritium-contaminated waste from these incidents was based primarily on operator interviews. That document was used to develop the following inventory of tritium in the waste.

Tritium-bearing waste associated with the first incident was shipped to the TSA in late 1973 and early 1974. The great majority of the tritium is located in a total of 11 drums. Very small amounts of tritium (possibly up to the mCi range) were in drums shipped a few months later.

Of the 11 drums, 9 were shown by assay at Rocky Flats Plant to have at least 1 g Pu and are almost certainly TRU waste, not ALLW. Two drums were shown by assay to have <1 g Pu. These two drums could conceivably be ALLW. (For a 300-lb drum, for example, about 0.17 g of weapons-grade Pu would represent a concentration of 100 nCi TRU/g.) It was assumed that these two drums were ALLW.

In the absence of more definitive information, the distribution of tritium throughout the 11 drums was assumed to be uniform. The activity of tritium in the nine TRU waste drums was thus estimated to be 9/11 of

---

q. D. K. Morrell, *RWMIS Non-Actinides Summary*, EDF PSPI-015546-07, September 29, 1995.

r. T. H. Smith, B. D. Raivo, *INEL Stored Waste (TSA) Non-database derived, Nonactinide Estimated Activity*, EDF PSPI-015546-08, October 12, 1995.

s. T. L. Clements, Jr., *Tritium-Contaminated Stored TRU Waste*, letter to K. B. McKinley, EG&G Idaho, Inc., TLC-6-84, May 14, 1984.

Table 4-48. Refined activity inventory for select nuclides.[a]

Category	Nuclide	Non-RWMIS derived activity decayed to 1993 (Ci)
Contact handled ALLW	H-3	46.9+1.0+3.9 = 51.8
	Co-60	4.6
	C-14	0.034
	Tc-99	0.001
	I-129	3.6E-07
Contact handled TRUW	H-3	211.8
	Co-60	0
	C-14	1.9
	Tc-99	0.030
	I-129	1.1E-05
Remote handled ALLW	H-3	0
	Co-60	0
	C-14	0
	Tc-99	4.0E-03
	I-129	1.4E-06
Remote handled TRUW	H-3	0
	Co-60	0
	C-14	0.45
	Tc-99	0.50
	I-129	1.7E-04
Total ALLW and TRUW	H-3	263.6
	Co-60	4.6
	C-14	2.384
	Tc-99	0.535
	I-129	1.828E-04

a. EDF PSPI-015546-08, 10/12/95.

the total of approximately 600-800 Ci for the 11 drums, or 491-655 Ci. The conservative value assumed was 655 Ci as of late 1973. The activity of tritium in the two ALLW drums was estimated to be 2/11 of the total, or 109-145 Ci. The conservative value assumed was 145 Ci as of late 1973.

The waste forms resulting from the first incident are primarily wet combustibles, dry combustibles, and leaded rubber gloves.

Tritium-bearing waste associated with the second incident is located in two drums shipped in 1981. No information is available on whether these drums are likely to be TRU waste or ALLW. It was assumed that both drums were ALLW. The amount of tritium in each of these drums was estimated to be 1 Ci, for a total of 2 Ci. The waste is in the form of dry combustibles.

Because of the absence of remote-handled (RH) drums in the stored waste from RFP, it was assumed that all of the tritium-containing drums are contact-handled (CH) waste.

Based on the above information, the total activity of tritium in the TRU waste and ALLW was assumed conservatively to be as follows:

- CH TRU waste — 655 Ci as of late 1973 (211.8 Ci decayed to 1993).
- RH TRU waste — 0
- CH ALLW — 145 + 2= 147 Ci at the time of generation. Of this activity, 145 Ci was generated in late 1973 (46.9 Ci decayed to 1993), plus 2 Ci in 1981 (1.0 Ci decayed to 1993),
  1.95 Ci recorded in RWMIS in 1977 (0.7978 Ci decayed to 1993).
- RH ALLW — 0

The activity decayed to 1993 for tritium as derived from non-database information sources for these two incidents is estimated to be 211.8 Ci + 46.9 Ci + 1.0 Ci = 259.7 Ci (in addition to RWMIS H-3 inventory).

4.3.2 Nonactinides in Radiation Sources

A recent waste management study conducted at the INEL in 1994,[t] which was based on previous studies performed in 1979 and 1980, provides data that are not in RWMIS on radiation sources in RFP waste received at the RWMC. Separate listings are given for the larger and smaller sources. Some of these sources are in the stored waste, and some are in the buried waste. Of those in the stored waste, some may be in the ALLW and some in the TRU waste.

The data in Table 4-49 on the nonactinides (plus Ra-226) in the radiation sources from RFP were obtained from the above study. All entries with an activity of 0.1 Ci or greater were included.

Waste packages shipped before or during October 1970 are generally considered to have been buried in the SDA rather than stored in the TSA. Therefore, the drums in the first, third, and fourth entries of Table 4-49 were assumed to have been buried and are outside the scope of this study.

The second entry in Table 4-49 is probably ALLW because it appears that only radiation sources, lead, and concrete were placed into this drum. Apparently, these particular sources were placed in a sole-purpose package, rather than being added to existing drums already containing waste.

The only nonactinide listed in RWMIS for stored waste from Rocky Flats Plant is the 1.95 Ci of H-3 discussed in Section 4.3.1. It is associated with waste retrieved from Pits 11 and 12 and placed into storage. Based on Card[4-6], that waste was buried in Pits 11 and 12 in 1970. Therefore, the 1.95 Ci of H-3 from RFP that is listed in RWMIS does not include any of the H-3 sources in the fifth through ninth entries listed in Table 4-49.

---

t. T. L. Clements, Jr., and G. R. Darnell, *Rocky Flats Plant Characterization (1954–1980)*, EG&G Idaho, Inc., EDF RWMC-761, July 1994.

Table 4-49. Nonactinides plus Ra-226 in radiation sources received from the Rocky Flats Plant.[a]

Shipping date	Package number	Nonactinide activity	Form	TRU waste?
6-18-70[b]	Drum 444-679	174 Ci Co-60 214 Ci Cs-137	Lead shielded	Probably not
5-9-73	Drum 68-8	64 Ci Co-60	Lead shielded	Probably not
10-70[b]	Drum (no number)	0.36 H-3	Unknown	Unknown
10-70[b]	Drum (no number)	0.1 Ci Ra-226	Unknown	Unknown
1975	Box 1544-85251	5 Ci H-3	Unknown	Unknown
1975	Drum 36-01846	0.25 Ci H-3	Scandium tritide	Unknown
1977	Drum D05548	0.25 Ci H-3	Unknown	Unknown
3-31-77	Drum 742-25064	3.1 Ci H-3	Unknown	Unknown
8-78	Drum 742-25667	1.5 Ci H-3	Scandium tritide	Unknown

a. EDF PSPI-015546-08, 10/12/95.
b. Assumed to be in buried waste, not included in this study.

Thus, all of the entries except the first, third, and fourth are (a) in the stored waste, (b) not included in the RWMIS printouts, and (c) because of the years in which they were shipped, not included in the H-3 discussed in Section 4.3.1.

No information is available to guide the assignment of the drums with radiation sources to TRU waste or to ALLW. It was conservatively assumed that the subject drums are all ALLW; the relative contribution of the radiation sources to the nonactinide inventory would be higher for the ALLW than for the TRU waste.

It was assumed that the H-3 sources are in the CH waste. For the Co-60 source, it was assumed that during treatment, the source will be removed from its lead-shielded CH drum just before treatment and addressed with the RH waste.

Based on the preceding discussion, the inventory was supplemented to include the following activities:

- CH TRU waste 0
- RH TRU waste 0
- CH ALLW 64 Ci Co-60 in 1973 (4.6 Ci decayed to 1993)
  10.1 Ci H-3
  5.25 Ci in 1975 (1.901 Ci decayed to 1993)
  3.35 Ci in 1977 (1.358 Ci decayed to 1993)
  1.5 Ci in 1978 (0.6433 Ci decayed to 1993)
- RH ALLW 0 (NOTE: the 64 Ci Co-60 in the CH ALLW above will become RH ALLW when the waste package is disassembled for treatment).

The total activity decayed to 1993 for non-actinides in radiation sources is estimated to be 4.6 Ci Co-60, and 1.901+1.358+0.6433 = 3.9 Ci H-3 (in addition to RWMIS inventory).

4.3.3 Presence of Other Radionuclides

The radionuclides C-14, I-129, and Tc-99 are often present in small activities in waste generated as a result of the operation of nuclear reactors. The activities of these radionuclides are difficult to measure; they are often not reported or are underreported in waste shipping records. Activities of 4E-5 Ci and 1.8E-3 Ci for C-14 and Tc-99, respectively, were reported in RWMIS for the total of all waste (TRU waste plus ALLW) in the TSA. No I-129 was reported.

The radionuclides C-14, I-129, and Tc-99 are potentially of interest because they are very long-lived and are relatively mobile upon release in groundwater. A conservative estimate of their possible activity in the waste was developed as follows.

The activities of these difficult-to-measure radionuclides are often estimated by comparing them with the activities of radionuclides that are readily measured. The activity of C-14 is compared with that of Co-60; the activities of I-129 and Tc-99 are compared with that of Cs-137. Typical values of these activity ratios, often called scaling factors, have been determined by a study performed for the Electric Power Research Institute (EPRI)[4-7] by evaluating a large quantity of laboratory data; however, there is considerable scatter in the data for these three particular radionuclides.

This scaling-factor approach has been used to attribute activities of these three radionuclides to some of the waste buried in the RWMC Subsurface Disposal Area.[4-8] The conservative estimates developed for the stored waste were based on the use of scaling factors taken from that reference.

The scaling factor for C-14 in INEL buried waste typically ranges from about 1E-3 to 1E-2, depending on the nature of the waste. If one conservatively multiplies the largest of these values, 1E-2, by the estimated total activity of Co-60, the results in Table 4-50 are obtained.

The scaling factor for Tc-99 in INEL buried waste typically ranges from about 1E-5 to 2E-4, depending on the nature of the waste. If one conservatively multiplies the largest of these values, 2E-4, by the estimated total activity of Cs-137, the results in Table 4-50 are obtained.

The scaling factor for I-129 in INEL buried waste typically ranges from about 3E-8 to 7E-8, depending on the nature of the waste. If one conservatively multiplies the largest of these values, 7E-8, by the estimated total activity of Cs-137, the results in Table 4-50 are obtained.

Because the half-lives of C-14, Tc-99, and I-129 are 5.73E3, 2.13E5, and 1.57E7 years, respectively, the specific years for which the activities are attributed do not affect the future activities to any substantial degree.

Table 4-50. Estimated activities of C-14, Tc-99, and I-129 in stored waste.[a]

Difficult-to-measure radionuclide	C-14	Tc-99	I-129
Scaling factor	1E-2 x Co-60	2E-4 x Cs-137	7E-8 x Cs-137
CH TRU waste			
Activity of scaling radionuclide[b] (Ci)	190.37	151.42	151.42
Activity of radionuclide (Ci)	1.9	0.030	1.1E-5
RH TRU waste			
Activity of scaling radionuclide[b] (Ci)	44.64	2491.11	2491.11
Activity of radionuclide (Ci)	0.45	0.50	1.7E-4
CH ALLW			
Activity of scaling radionuclide[b] (Ci)	3.38	5.12	5.12
Activity of radionuclide (Ci)	0.034	1.0E-03	3.6E-07
RH ALLW			
Activity of scaling radionuclide[b] (Ci)	0	19.91	19.91
Activity of radionuclide (Ci)	0	4.0E-3	1.4E-6

a. EDF PSPI-015546-08, 10/12/95.

b. Scaling radionuclides are Co-60 for C-14, Cs-137 for Tc-99, and Cs-137 for I-129. Activities of scaling radionuclides were taken from LITCO August 1995 RWMIS analysis, with the assumptions that (a) MAP entries are 100% Co-60, (b) MFP and unidentified beta-gamma-emitter entries are 50% Cs-137 and 50% Sr-90.

4.4 References

4-1. U.S. Department of Energy Order 5820.2A, *Radioactive Waste Management*, Office of Defense Waste and Transportation Management, U.S. Department of Energy, Washington, D.C., September 26, 1988.

4-2. E. Browne and R. B. Firestone, *Table of Radioactive Isotopes*, John Wiley & Sons, 1986.

4-3. I. R. Terry, "A Practical Algorithm to Derive the (α, n) Source Term in a Composite Mixture Containing Actinides," *Nuclear Science Engineering 113*, p. 282, 1993.

4-4. M. E. Anderson and J. F. Lemming, *Selected Measurement Data for Plutonium and Uranium*, Mound Laboratory report MLM-3009/ISPO-157, November 1982.

4-5. C. L. Atwood and M. J. Schlafman, *Empirical Distributions of Radionuclides from RWMIS Data*, EG&G Idaho, Inc., EGG-RAAM-10741, April 1993.

4-6. D. H. Card, *History of Buried Transuranic Waste at INEL*, EG&G Idaho, Inc., WMP 77-3, March 1977.

4-7. EPRI, *Updated Scaling Factors in Low-Level Radwaste*, EPRI NP-5077, Impell Corporation, March 1987.

4-8. LITCO (Lockheed Idaho Technologies Company), *A Comprehensive Inventory of Radiological and Nonradiological Contaminants in Waste Buried in the Subsurface Disposal Area of the INEL RWMC During the Years 1984-2003*, INEL-95/0135, revision 1, 3 volumes, August, 1995.

5. WASTE HAZARDOUS CHARACTERIZATION

The majority of INEL TSA stored waste is mixed waste. The waste is contaminated with both RCRA listed and characteristic constituents as well as some TSCA regulated constituents. Source information used to identify the presence of contaminants was in accordance with the current database and supporting documentation used for Federal Facilities Compliance Act compliance reporting requirements. Information available from compliance reporting contained estimated listings of contaminants present in the waste; however, definitive information on contaminant concentrations present in the waste was not available. Further document review for presence of contaminants resulted in the additional listing of some constituents in a few of the waste streams.

The concentration information is presented in Appendices A and B. Additional compilations and assumptions were made in order to expand and quantify concentration values and present bounding estimates. Confidence in the accuracy of the estimated concentration values given at a content code level based on past documentation is low; however this information is considered the best available at this time.

Assumed maximum concentrations are also shown in Appendices A and B and are considered to represent bounding values for listed constituents with a margin of conservatism. The intent of this presentation is to provide a consistent basis for use in preparation and evaluation of proposals for treatment services. The information provided in this section is based on data contained in the IMWI database[a] and work by Raivo and Pace (1994)[b] and Raivo (1995).[c]

Ongoing characterization efforts being performed at the INEL will increase the confidence in some concentration values presented in future waste descriptions, and any additional information acquired during retrieval efforts prior to any transport of the waste will be made available. Efforts necessary to obtain high confidence data in all the varied waste streams may not be economically feasible, therefore generation of any facility Waste Acceptance Criteria for input waste streams should allow for a sufficient margin of conservatism.

Historical Transuranic Storage Area (TSA)-stored waste hazardous summary information is shown in Table 5-1 for primary hazardous constituents. Table 5-1 concentrations are based on typical expected concentration from historical documents. Table 5-2 provides current estimates of the major contaminants based on assumed maximum concentrations at the content code level rolled up to the total, which are considered to represent conservative estimates. Table 5-3 provides estimates for all contaminants. Tables 5-2 and 5-3 should be used for all estimates; Table 5-1 is provided for reference only.

---

a. Idaho Mixed Waste Information (IMWI), Idaho National Engineering Laboratory, September 1995.

b. B. D. Raivo, D. P. Pace, Preliminary EPA Hazardous Constituents Design Basis Concentrations for ALLW Treatment Services, EDF PSPI-015546-04, January 18, 1994.

c. B. D. Raivo, EPA Hazardous Constituent Design Basis Concentrations for INEL Stored Waste (TSA) Treatment Services, EDF PSPI-015546-13, December 15, 1995.

Table 5-1. Historical TSA-stored waste hazardous information.[a]

Hazardous constituent	Average mass fraction of total waste	Maximum fraction of any waste container
1,1,1-trichloroethane	0.00581	0.1500
Carbon tetrachloride	0.00627	0.0500
1,1,2-trichloro-1,2,2-trifluoroethane	0.00371	0.0500
Trichloroethene	0.00392	0.1500
Perchloroethylene	0.00062	0.0500
Methylene chloride	0.00040	0.0010
Methyl alcohol	0.000008	0.000025
Butyl alcohol	0.000003	0.00001
Xylene	0.00002	0.00005
Cadmium	0.000003	0.00001
Lead	0.00826	0.6000
Mercury	0.00354	0.2000
Lithium	0.00177	0.2000
Beryllium	0.00021	0.9500
Nitric acid	0.00190	0.5050
Nitrates	0.00037	0.9000
Polychlorinated biphenyls[b,c]	0.00854	0.5560
Asbestos[b]	0.00274	0.4500

a. Historical reporting information on chemical contaminants representative of waste at the TSA. (EDF ENV-003, 2/5/90. INEL ER&WM EIS, 1993, RFP No. DE-RP07-94ID 13278 SOW, 12/15/93)

b. To provide more complete waste information, concentration data for some toxic (TSCA) waste constituents not considered hazardous under RCRA are provided.

c. As many as 7,600 drums stored in the TSA are suspect for containing PCBs. The actual number of drums is unknown. These drums are estimated to be within the code 000 (Unknown) or code 003 (Organic setups) waste streams. For purposes of treatment services feasibility studies, PCB concentration within these 7,600 drums is considered to be >500 ppm.

Table 5-2. Distribution of hazardous contaminants.[a]

Hazardous Contaminant [b]		Percent of Total inventory (%)	Percent of Total RCRA contaminants (%)	Estimated Contaminant Mass (kg)
RCRA				
	D008A	4.13	17.15	1,317,638.67
	F001C	2.99	12.41	954,019.29
	F001A	2.52	10.45	802,756.49
	D008C	2.35	9.76	750,316.25
	F001B	1.47	6.10	469,144.37
	D009A	1.14	4.72	362,866.76
	F002F	0.92	3.81	293,121.68
	F001F	0.89	3.68	282,832.98
	D002E	0.87	3.61	277,672.66
	F003I	0.77	3.18	244,193.71
	F003F	0.61	2.55	195,661.01
	F001E	0.58	2.41	185,045.09
	D006A	0.47	1.95	149,673.28
	F003H	0.43	1.78	136,943.94
	D028A	0.39	1.63	125,088.76
	D022A	0.39	1.61	123,747.58
	F005H	0.35	1.45	111,798.36
	D002F	0.34	1.41	107,980.00
	F003D	0.28	1.17	90,242.00
	F005C	0.25	1.06	81,289.17
	D029A	0.25	1.05	80,698.59
	D007A	0.25	1.04	80,099.41
	D011A	0.24	1.01	77,855.61
	F003A	0.23	0.97	74,368.48
	D005A	0.23	0.96	73,440.35
	D002A	0.17	0.72	55,423.40
	P015	0.17	0.72	55,423.40
	D001G	0.14	0.58	44,753.64
	Others	0.25	1.05	80,893.99
	Total RCRA	24.09	100.00	7,684,988.95
TSCA				
	Asbestos	1.90		605,633.20
	PCBs	1.83		585,348.50
	Total TSCA	3.73		1,190,981.70

a. Percent values are based on estimated maximum concentrations of contaminants within each content code and a total estimated inventory mass of 3.19E+07 kg which corresponds to 65,000-m3. EDF PSPI-015546-13, 12/15/95.

b. Contaminants >0.1% of total inventory, see table 5-3 for code identification.

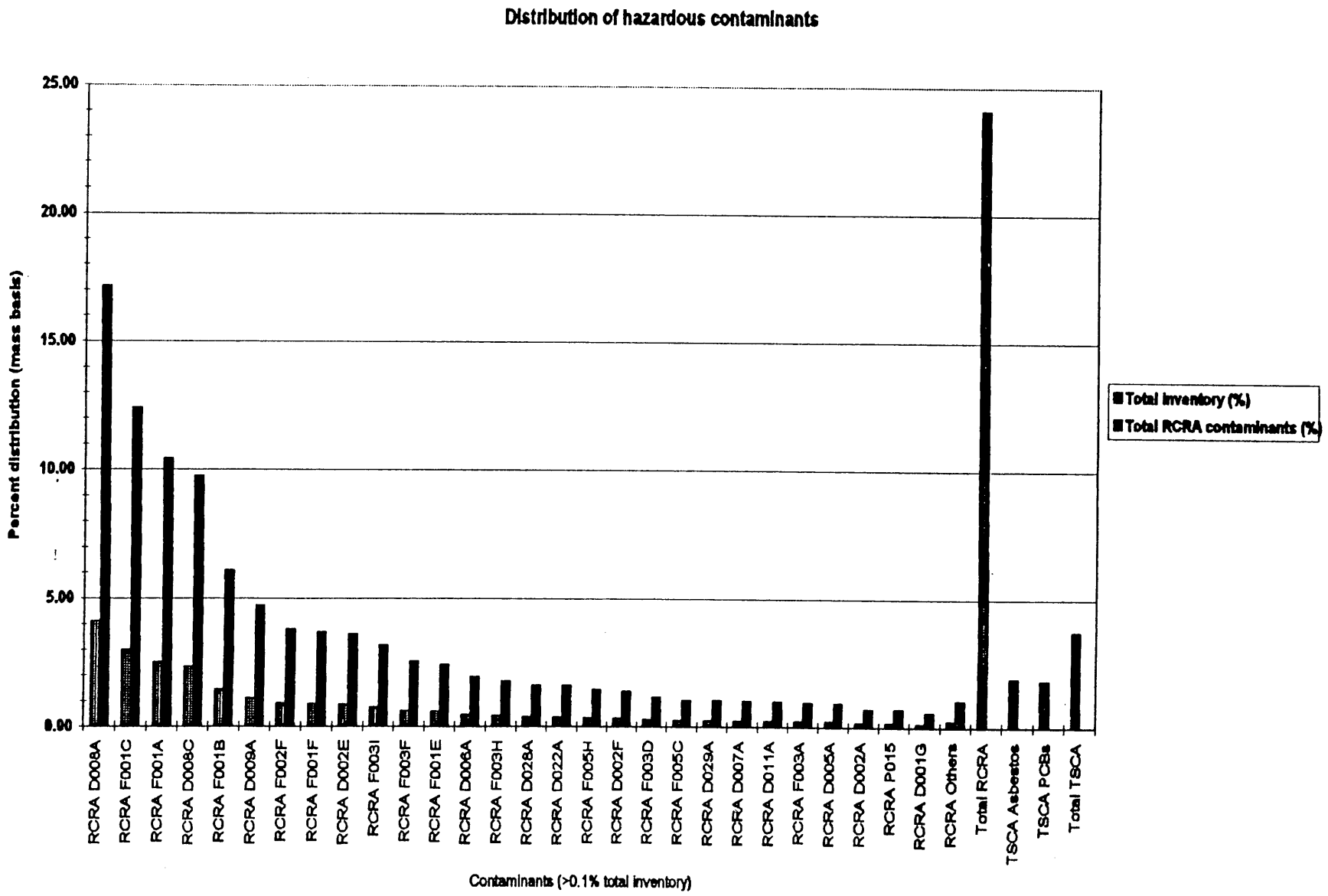


Figure 5-1. Distribution of hazardous contaminants.

Table 5-3. Hazardous contaminants summary for TSA stored waste.[a]

Ucode identifier	Epacode	RCRA category	Subcategory	Estimated mass[b] (kg)
D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)	1,040.0
D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	44,753.6
D001H	D001	Ignitable	Ignitable characteristic wastes that are managed in CWA, CWA equivalent, or Class I SDWA systems	0.0
D002A	D002	Corrosive	Acid	55,423.4
D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems	277,672.7
D002F	D002	Corrosive	Corrosive characteristic wastes that are managed in CWA, CWA equivalent, or Class I SDWA system	107,980.0
D003F	D003	Reactive	Water reactives based on 261.23(a)(2),(3), and (4)	1,225.9
D004A	D004	Arsenic	.	8,543.5
D005A	D005	Barium	.	73,440.4
D006A	D006	Cadmium	.	149,673.3
D007A	D007	Chromium	Chromium (Total)	80,099.4
D008A	D008	Lead	.	1,317,638.7
D008C	D008	Lead	Radioactive lead solids	750,316.3
D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	362,866.8
D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	19,299.6
D009G	D009	Mercury	High-mercury inorganic subcategory (>=260 mg/kg total) inorganic, including incinerator and RMERC residues.	33.3
D010A	D010	Selenium	.	16,929.6
D011A	D011	Silver	.	77,855.6
D018A	D018	Benzene	Benzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D019A	D019	Carbon tetrachloride	Carbon Tetrachloride managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D021A	D021	Chlorobenzene	Chlorobenzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	123,747.6
D026A	D026	Cresol	Cresols (Total) managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D027A	D027	p-Dichlorobenzene (1,4-Dichlorobenzene)	p-Dichlorobenzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	71.2
D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	125,088.8
D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	80,698.6
D031A	D031	Heptachlor	Heptachlor managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	0.0
D032A	D032	Hexachlorobenzene	Hexachlorobenzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D034A	D034	Hexachloroethane	Hexachloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D035A	D035	Methyl ethyl ketone	Methyle ethyl ketone managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D036A	D036	Nitrobenzene	Nitrobenzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D038A	D038	Pyridine	Pyridine managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	77.1
D039A	D039	Tetrachloroethylene	Tetrachloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	148.3
D040A	D040	Trichloroethylene	Trichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	148.3
F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	802,756.5
F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	469,144.4
F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	954,019.3

Table 5-3. (continued).

Ucode identifier	Epacode	RCRA category	Subcategory	Estimated mass[b] (kg)
F001D	F001	Spent halogenated solvents used in degreasing	Methylene chloride	148.3
F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	185,045.1
F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	282,833.0
F002A	F002	Spent halogenated solvents	o-Dichlorobenzene	77.1
F002B	F002	Spent halogenated solvents	1,1,1-Trichloroethane	77.1
F002D	F002	Spent halogenated solvents	1,1,2-Trichloroethane	77.1
F002E	F002	Spent halogenated solvents	Chlorobenzene	77.1
F002F	F002	Spent halogenated solvents	Methylene chloride	293,121.7
F002H	F002	Spent halogenated solvents	Tetrachloroethylene	148.3
F002I	F002	Spent halogenated solvents	Trichloroethylene	789.1
F003A	F003	Spent non-halogenated solvents	Acetone	74,368.5
F003D	F003	Spent non-halogenated solvents	Ethyl benzene	90,242.0
F003E	F003	Spent non-halogenated solvents	Ethyl ether	3,214.6
F003F	F003	Spent non-halogenated solvents	Methanol	195,661.0
F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	136,943.9
F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	244,193.7
F004B	F004	Spent non-halogenated solvents	Nitrobenzene	20,910.9
F005B	F005	Spent non-halogenated solvents	2-Nitropropane	77.1
F005C	F005	Spent non-halogenated solvents	Benzene	81,289.2
F005D	F005	Spent non-halogenated solvents	Carbon disulfide	77.1
F005E	F005	Spent non-halogenated solvents	Isobutyl alcohol	77.1
F005F	F005	Spent non-halogenated solvents	Methyl ethyl ketone	148.3
F005G	F005	Spent non-halogenated solvents	Pyridine	77.1
F005H	F005	Spent non-halogenated solvents	Toluene	111,798.4
P005	P005	Allyl alcohol	.	77.1
P012	P012	Arsenic trioxide	.	77.1
P015	P015	Beryllium powder	.	55,423.4
P022	P022	Carbon disulfide	.	77.1
P024	P024	p-Chloroaniline	.	77.1
P027	P027	3-Chloropropionitrile	.	77.1
P028	P028	Benzyl chloride	.	77.1
P030A	P030	Cyanides (Soluble salts and complexes)	Cyanides (Total)	77.1
P031	P031	Cyanogen	.	77.1
P056	P056	Fluorine	Fluoride (measured in wastewaters only)	77.1
P073	P073	Nickel carbonyl	Nickel	77.1
P075	P075	Nicotine and Salts	.	77.1
P077	P077	p-Nitroaniline	p-Nitroaniline	77.1
P098A	P098	Potassium cyanide	Cyanide (Total)	77.1
P104A	P104	Silver cyanide	Cyanide (Total)	77.1
P105	P105	Sodium azide	.	77.1
P106A	P106	Sodium cyanide	Cyanide (Total)	77.1

Table 5-3. (continued).

Ucode identifier	Epacode	RCRA category	Subcategory	Estimated mass[b] (kg)
P113	P113	Thallic oxide	Thallium (measured in wastewaters only)	77.1
P116	P116	Thiosemicarbazide	.	77.1
P119	P119	Ammonium vanadate	Vanadium (measured in wastewaters only)	77.1
P120	P120	Vanadium pentoxide	Vanadium (measured in wastewaters only)	77.1
U003	U003	Acetonitrile	.	77.1
U004	U004	Acetophenone	Acetophenone	77.1
U007	U007	Acrylamide	.	77.1
U009	U009	Acrylonitrile	Acrylonitrile	77.1
U012	U012	Aniline	.	77.1
U014	U014	Auramine	.	77.1
U019	U019	Benzene	.	77.1
U020	U020	Benzenesulfonyl chloride	.	77.1
U032	U032	Calcium chromate	Chromium (total)	77.1
U037	U037	Chlorobenzene	Chlorobenzene	77.1
U044	U044	Chloroform	.	77.1
U048	U048	o-Chlorophenol	2-Chlorophenol	77.1
U052E	U052	Cresols (cresylic acid)	Cresols-mixed isomers (sum or o-, m-, and p-cresol concentrations)	77.1
U069	U069	Dibutyl phthalate	Di-n-butyl phthalate	77.1
U079	U079	1,2-Dichloroethylene	trans-1,2-Dichloroethylene	77.1
U080	U080	Methylene chloride	.	77.1
U081	U081	2,4-Dichlorophenol	2,4-Dichlorophenol	77.1
U083	U083	1,2-Dichloropropane	1,2-Dichloropropane	77.1
U084A	U084	cis-1,3-Dichloropropene	cis-1,3-Dichloropropene	77.1
U084B	U084	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	77.1
U102	U102	Dimethyl phthalate	Dimethyl phthalate	77.1
U103	U103	Dimethyl sulfate	.	77.1
U108	U108	1,4-Dioxane	.	77.1
U116	U116	Ethylene thiourea	.	77.1
U118	U118	Ethyl methacrylate	Ethyl methacrylate	77.1
U120	U120	Fluoranthene	Fluoranthene	77.1
U122	U122	Formaldehyde	.	77.1
U123	U123	Formic acid	.	77.1
U127	U127	Hexachlorobenzene	Hexachlorobenzene	77.1
U128	U128	Hexachlorobutadiene	Hexachlorobutadiene	77.1
U131	U131	Hexachloroethane	Hexachloroethane	77.1
U133	U133	Hydrazine	.	77.1
U134	U134	Hydrogen fluoride	Fluoride (measured in wastewaters only)	77.1
U135	U135	Hydrogen sulfide	.	77.1
U138	U138	Iodomethane	.	77.1
U140	U140	Isobutyl alcohol	.	77.1
U144	U144	Lead acetate	Lead	77.1

Table 5-3. (continued).

Ucode identifier	Epacode	RCRA category	Subcategory		Estimated mass[b] (kg)
U145	U145	Lead phosphate	Lead		77.1
U147	U147	Maleic anhydride	.		77.1
U151D	U151	Mercury nonwastewaters- low mercury (<260 mg/kg total mercury) and that are not residues from RMERC.	.		77.1
U159	U159	Methyl ethyl ketone	.		77.1
U162	U162	Methyl methacrylate	Methyl methacrylate		77.1
U165	U165	Naphthalene	Naphthalene		77.1
U169	U169	Nitrobenzene	Nitrobenzene		77.1
U170	U170	p-Nitrophenol	4-Nitrophenol		77.1
U171	U171	Nitropropane, 2-	.		77.1
U182	U182	Paraldehyde	.		77.1
U188	U188	Phenol	.		77.1
U190	U190	Phthallic anhydride	Phthallic anhydride (measured as phthalic acid or phthallic anhydride)		77.1
U191	U191	2-Picoline	.		77.1
U196	U196	Pyridine	.		77.1
U201	U201	Resorcinol	Resorcinol		77.1
U204	U204	Selenioum dioxide	Selenium		77.1
U207	U207	1,2,4,5-Tetrachlorobenzene	1,2,4,5-Tetrachlorobenzene		77.1
U208	U208	1,1,1,2-Tetrachloroethane	1,1,1,2-Tetrachloroethane		77.1
U210	U210	Tetrachloroethylene	.		77.1
U211	U211	Carbon tetrachloride	.		77.1
U215	U215	Thallium (I) carbonate	Thallium (measured in wastewaters only)		77.1
U217	U217	Thallium (I) nitrate	Thallium (measured in wastewaters only)		77.1
U218	U218	Thioacetamide	.		77.1
U219	U219	Thiourea	.		77.1
U220	U220	Toluene	.		77.1
U225	U225	Bromoform	Tribromomethane (Bromoform)		77.1
U226	U226	1,1,1-Trichloroethane	.		77.1
U227	U227	1,1,2-Trichloroethane	.		77.1
U228	U228	Trichloroethylene	.		77.1
U239	U239	Xylenes	Xylenes - mixed isomers (sum of o-, m- and p-xylene concentrations)		77.1
U328	U328	o-Toluidine	.		77.1
UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.		1.0
UNKWN		Unknown	.		0.0
				Subtotal	7,684,989.0
TSCAA	TSCA	Asbestos			605,633.2
TSCAB	TSCA	PCBs[c]			585,348.5
				Subtotal	,981.7

Table 5-3. (continued).

Ucode identifier	Epacode	RCRA category	Subcategory	Estimated mass[b] (kg)

a. Estimated RCRA and TSCA contaminants summary representative of waste currently stored at the TSA.

b. Based on assumed maximum concentrations of contaminants.

c. An estimated 7,600 drums stored in the TSA are estimated to contain PCBs. These drums are estimated to be within code 000 (Unknown) or code 003 (Organic Setups) waste streams. For the purposes of treatment services RFP responses, PCB concentration within these 7,600 drums is considered to be > 500 ppm.

6. INEL WASTE PROFILE SHEET FORMAT

The format and description of the contents of the detailed waste information provided in Appendices A and B for mixed and non-mixed ALLW and TRUW are provided below. Appendix A provides detailed information on the ALLW and Appendix B provides information on the TRUW. The appendices provide a series of detail tables based on similar subject matter (e.g., description, storage, matrix information, etc.), with the format of each table being similar in each appendix.

6.1 Identification and Description

Table 1 provides general identification and description information for each wastestream. The following fields appear in this table:

Waste category	A value of 2 denotes ALLW, a value of 3 denotes TRUW.
Mixed waste	A value of 1 denotes mixed waste, a value of 2 denotes non-mixed waste.
Key code	A unique number code assigned to each waste stream for tracking purposes.
Waste stream identifier code	An INEL text/number code which identifies each waste stream.
Content code	A number or text code for each waste stream which can be related to past identification practices.
Waste stream name	The waste stream name.
Description	A description of the waste stream. This is usually the waste stream description provided in WMIS.
PCBs	An indication whether PCBs may be present in the waste, a value of 1 denotes PCBs are expected to be in the waste, 2 denotes not expected, 3 denotes unknown.
Asbestos	An indication whether asbestos may be present in the waste, a value of 1 denotes asbestos is expected to be in the waste, 2 denotes not expected, 3 denotes unknown.
Rad level	An indication of the expected radiation level of the container. A value of 1 denotes waste is expected to be contact handled, a value of 2 denotes that some portion or all of the waste stream is expected to contain waste which may be remote handled (greater than 200 mrem/hr at contact).
Generator site	The name of the site that generated the waste.
Combustibility	An indication of the combustibility of the waste. A value of 1 denotes combustibility is estimated at greater than 90% (combustible). A value of 2 denotes combustibility is estimated at

between 10-90% (partially combustible). A value of 3 denotes combustibility is estimated at less than 10% (noncombustible)

The fields waste category, mixed waste, key code, waste stream identifier code, and content code fields are common for each subsequent appendix table.

Table 6-1 presents a summary listing of waste stream identifier codes and waste stream names.

Table 6-1. Summary of waste identifier code and name.[a]

Key	Waste stream ID	Content code	Waste stream name
Alpha Low Level Mixed Waste			
155	ID-AEO-100	100	GENERAL PLANT WASTE
156	ID-AEO-101	101	CUT UP GLOVEBOXES
297	ID-AEO-102	102	ABSORBED LIQUIDS
206	ID-AEO-104	104	ALPHA HOT CELL WASTE
300	ID-ANL-161	161	ANL-W ANALYTICAL CHEMISTRY LAB GLASSWARE
158	ID-BCO-201	201	NONCOMBUSTIBLE SOLIDS
301	ID-BCO-202	202	COMBUSTIBLE SOLIDS
302	ID-BCO-203	203	PAPER, METALS, GLASS
303	ID-BCO-204	204	SOLIDIFIED SOLUTIONS
72	ID-BTO-010	10	COMBUSTIBLES
142	ID-BTO-020	20	NONCOMPRESSIBLE, NONCOMBUSTIBLE
34	ID-BTO-030	30	SOLIDIFIED GRINDING SLUDGE, ETC.
299	ID-CPP-156	156	CHEM CELL RIP-OUT
188	ID-INL-150	150	LABORATORY WASTE
298	ID-INL-155	155	SCRAP
146	ID-MDO-803	803	METAL, EQUIPMENT, PIPES, VALVES, ETC.
160	ID-MDO-824	824	NONCOMBUSTIBLE EQUIPMENT BOXES
77	ID-MDO-826	826	COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWE
58	ID-MDO-834	834	HIGH-LEVEL ACID
59	ID-MDO-835	835	HIGH-LEVEL CAUSTIC
60	ID-MDO-836	836	HIGH-LEVEL SLUDGE/CEMENT
304	ID-MDO-838	838	<10 nCi/g NONCOMBUSTIBLE
191	ID-MDO-842	842	CONTAMINATED SOIL
305	ID-MDO-847	847	LSA <100 nCi/g COMBUSTIBLE
306	ID-MDO-848	848	LSA <100 nCi/g NONCOMBUSTIBLE
29	ID-OFS-111	111	RESEARCH GENERATED WASTE NONCOMPACTIBLE
157	ID-OFS-121	121	DECONTAMINATION AND DECOMMISSIONING WASTE
293	ID-RFO-000	0	NOT RECORDED - UNKNOWN
28	ID-RFO-001	1	FIRST STAGE SLUDGE
31	ID-RFO-002	2	SECOND STAGE SLUDGE

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
235	ID-RFO-003	3	ORGANIC SETUPS, OIL SOLIDS
57	ID-RFO-004	4	SPECIAL SETUPS (CEMENT)
223	ID-RFO-005	5	EVAPORATOR SALTS
35	ID-RFO-007	7	BLDG 374 DRY SLUDGE
192	ID-RFO-090	90	DIRT
55	ID-RFO-112	112	SOLIDIFIED ORGANICS
30	ID-RFO-113	113	SOLID LAB WASTE
56	ID-RFO-114	114	SOLIDIFIED INORGANIC PROCESS SOLUTION
73	ID-RFO-116	116	COMBUSTIBLE WASTE
141	ID-RFO-117	117	METAL WASTE
120	ID-RFO-118	118	GLASS WASTE
102	ID-RFO-119	119	HEPA FILTER WASTE
93	ID-RFO-122	122	INORGANIC SOLID WASTE
129	ID-RFO-123	123	LEADED RUBBER
159	ID-RFO-241	241	AMERICIUM PROCESS RESIDUE
32	ID-RFO-290	290	FILTER SLUDGE
33	ID-RFO-292	292	CEMENTED SLUDGE
171	ID-RFO-300	300	GRAPHITE
172	ID-RFO-301	301	GRAPHITE CORES
51	ID-RFO-302	302	BENELEX AND PLEXIGLASS
143	ID-RFO-320	320	TANTALUM
104	ID-RFO-328	328	FULFLO INCINERATOR FILTERS
74	ID-RFO-330	330	DRY PAPER AND RAGS
105	ID-RFO-335	335	ABSOLUTE 8 X 8 FILTERS
75	ID-RFO-336	336	MOIST PAPER AND RAGS
76	ID-RFO-337	337	PLASTICS, TEFLON, WASH, PVC
106	ID-RFO-338	338	INSULATION AND CHEMICAL WARFARE SERVICE
130	ID-RFO-339	339	LEADED RUBBER GLOVES AND APRONS
107	ID-RFO-360	360	INSULATION
94	ID-RFO-371	371	FIREBRICK
190	ID-RFO-374	374	BLACKTOP, CONCRETE, DIRT AND SAND
95	ID-RFO-375	375	OIL-DRI RESIDUE FROM INCINERATOR
108	ID-RFO-376	376	CEMENTED INSULATION FILTER MEDIA
217	ID-RFO-430	430	UNLEACHED ION COLUMN RESIN
218	ID-RFO-431	431	LEACHED RESIN
219	ID-RFO-432	432	LEACHED AND CEMENTED RESIN
121	ID-RFO-440	440	GLASS

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
122	ID-RFO-441	441	UNLEACHED RASHIG RINGS
123	ID-RFO-442	442	LEACHED RASHIG RINGS
131	ID-RFO-463	463	LEADED RUBBER GLOVES AND APRONS
52	ID-RFO-464	464	BENELEX AND PLEXIGLASS
144	ID-RFO-480	480	NONSPECIAL SOURCE METAL
145	ID-RFO-481	481	LEACHED NONSPECIAL SOURCE METAL
109	ID-RFO-490	490	CHEMICAL WARFARE SERVICE FILTERS
78	ID-RFO-900	900	LOW SPECIFIC ACTIVITY PLASTICS, PAPER, ETC.
161	ID-RFO-950	950	LOW SPECIFIC ACTIVITY METAL, GLASS, ETC.
79	ID-RFO-970	970	WOOD
61	ID-RFO-976	976	BLDG 776 PROCESS SLUDGE
62	ID-RFO-978	978	LAUNDRY SLUDGE
193	ID-RFO-990	990	DIRT
294	ID-RFO-9999	9999	PRE-73 DRUMS
240	ID-TAN-162	*	TAN DECON SOLVENT WASTES
241	ID-TAN-163	*	TAN DECON HEAVY METAL SOLIDS AND DEBRIS
774	LB-W012	*	BASIC SOLIDS w/METALS - HIGH ALPHA
Subtotal	84		
Alpha Low Level Non-Mixed Waste			
764	CH-ANL-RDA	*	ANLW ALPHA LOW LEVEL WASTE
207	ID-INL-153N	153	COMBUSTIBLE LAB WASTE
162	ID-MDO-825N	825	NONCOMBUSTIBLE EQUIPMENT DRUMS
36	ID-RFO-095N	95	SLUDGE
173	ID-RFO-115N	115	GRAPHITE WASTE
174	ID-RFO-310N	310	GRAPHITE SCARFINGS
175	ID-RFO-370N	370	CRUCIBLE, LECO
189	ID-RFO-372N	372	GRIT
194	ID-RFO-425N	425	FLUID BED ASH
96	ID-RFO-960N	960	CONCRETE, ASPHALT, ETC.
37	ID-RFO-995N	995	SLUDGE
208	ID-TRA-154N	154	SAMPLE FUEL
Subtotal	12		
Total	96		
Transuranic Mixed Waste			
391	CH-ANL-142T	*	LEAD CONTAMINATED WASTE
9	CH-ANL-180T	*	SODIUM - TRU

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
11	CH-ANL-182T	*	SODIUM POTASSIUM -NaK- TRU
15	CH-ANL-218T	*	ELECTROREFINER STRIPPED SALT - Ba AND Cd
17	CH-ANL-241T	*	TRU-CD-HOT CELL WASTE
19	CH-ANL-243T	*	ELEMENT HARDWARE FCF WASTE
21	CH-ANL-245T	*	ELECTROREFINER STRIPPED CADMIUM
22	CH-ANL-246T	*	ELECTROREFINER INSOLUBLES W/ CADMIUM
392	CH-ANL-503T	*	TRU WASTE USED PRE-FILTERS
390	CH-ANL-505T	*	ALHC UPGRADE DECON DEBRIS
163	ID-AEO-100T	100	GENERAL PLANT WASTE
164	ID-AEO-101T	101	CUT UP GLOVEBOXES
307	ID-AEO-102T	102	ABSORBED LIQUIDS
209	ID-AEO-104T	104	ALPHA HOT CELL WASTE
308	ID-AEO-105T	105	EMPTY BOTTLES
309	ID-AEO-106T	106	SPECIAL SOURCE MATERIAL
310	ID-AEO-107T	107	REMOTE-HANDLED WASTE
81	ID-AEO-110T	110	RESEARCH GENERATED WASTE COMPACTIBLE & C
83	ID-AEO-120T	120	DECONTAMINATION AND DECOMMISSIONING WASTE
313	ID-ANL-160T	160	ANL-W HFEF ANALYTICAL CHEMISTRY AND META
314	ID-ANL-162T	162	ANL-W FMF EFL Zr-U FUEL CASTING ALLOYS R
315	ID-ANL-163T	163	ANL-W ACL COLD-LINE ABSORBED LIQUID, MIS
166	ID-BCO-201T	201	NONCOMBUSTIBLE SOLIDS
317	ID-BCO-202T	202	COMBUSTIBLE SOLIDS
318	ID-BCO-203T	203	PAPER, METALS, GLASS
319	ID-BCO-204T	204	SOLIDIFIED SOLUTIONS
80	ID-BTO-010T	10	COMBUSTIBLES
148	ID-BTO-020T	20	NONCOMPRESSIBLE, NONCOMBUSTIBLE
43	ID-BTO-030T	30	SOLIDIFIED GRINDING SLUDGE, ETC.
213	ID-BTO-040T	40	SOLID BINARY SCRAP POWDER, ETC.
210	ID-CPP-151T	151	SOLIDIFIED FUEL SLUDGE
347	ID-CPP-172	*	HEPA FILTERS
204	ID-INL-142T	*	TRANSURANIC CONTAMINATED LEAD DEBRIS
195	ID-INL-150T	150	LABORATORY WASTE
311	ID-INL-155T	155	SCRAP
312	ID-INL-157T	157	MISCELLANEOUS SOURCES
320	ID-MDO-801T	801	RAGS, PAPER, WOOD, ETC.
135	ID-MDO-802T	802	DRY BOX GLOVES AND O-RINGS
152	ID-MDO-803T	803	METAL, EQUIPMENT, PIPES, VALVES, ETC.

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
117	ID-MDO-805T	805	ASBESTOS FILTERS
128	ID-MDO-810T	810	GLASS, FLASKS, SAMPLE VIALS, ETC.
45	ID-MDO-811T	811	EVAPORATOR AND DISSOLVER SLUDGE
118	ID-MDO-813T	813	GLASS FILTERS AND FIBERGLASS
179	ID-MDO-814T	814	CONTAMINATED MERCURY OR GRAPHITE CRUCIBL
321	ID-MDO-815T	815	CLASSIFIED PARTS
168	ID-MDO-824T	824	NONCOMBUSTIBLE EQUIPMENT BOXES
88	ID-MDO-826T	826	COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWE
89	ID-MDO-827T	827	COMBUSTIBLE EQUIPMENT DRUMS
67	ID-MDO-834T	834	HIGH-LEVEL ACID
68	ID-MDO-835T	835	HIGH-LEVEL CAUSTIC
69	ID-MDO-836T	836	HIGH-LEVEL SLUDGE/CEMENT
198	ID-MDO-842T	842	CONTAMINATED SOIL
322	ID-MDO-847T	847	LOW SPECIFIC ACTIVITY (< 100 nCi/g) COMB
323	ID-MDO-848T	848	LOW SPECIFIC ACTIVITY (< 100 nCi/g) NONC
39	ID-OFS-111T	111	RESEARCH GENERATED WASTE NONCOMPACTIBLE
165	ID-OFS-121T	121	DECONTAMINATION AND DECOMMISSIONING WAST
295	ID-RFO-000T	0	NOT RECORDED - UNKNOWN
38	ID-RFO-001T	1	FIRST STAGE SLUDGE
41	ID-RFO-002T	2	SECOND STAGE SLUDGE
236	ID-RFO-003T	3	ORGANIC SETUPS, OIL SOLIDS
65	ID-RFO-004T	4	SPECIAL SETUPS (CEMENT)
227	ID-RFO-005T	5	EVAPORATOR SALTS
44	ID-RFO-007T	7	BLDG 374 DRY SLUDGE
63	ID-RFO-112T	112	SOLIDIFIED ORGANICS
40	ID-RFO-113T	113	SOLID LAB WASTE
64	ID-RFO-114T	114	SOLIDIFIED INORGANIC PROCESS SOLUTION
82	ID-RFO-116T	116	COMBUSTIBLE WASTE
147	ID-RFO-117T	117	METAL WASTE
124	ID-RFO-118T	118	GLASS WASTE
110	ID-RFO-119T	119	HEPA FILTER WASTE
97	ID-RFO-122T	122	INORGANIC SOLID WASTE
132	ID-RFO-123T	123	LEADED RUBBER
167	ID-RFO-241T	241	AMERICIUM PROCESS RESIDUE
42	ID-RFO-292T	292	CEMENTED SLUDGE.
176	ID-RFO-300T	300	GRAPHITE
177	ID-RFO-301T	301	GRAPHITE CORES

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
53	ID-RFO-302T	302	BENELEX AND PLEXIGLASS
178	ID-RFO-312T	312	COARSE GRAPHITE
149	ID-RFO-320T	320	TANTALUM
111	ID-RFO-328T	328	FULFLO INCINERATOR FILTERS
84	ID-RFO-330T	330	DRY PAPER AND RAGS
112	ID-RFO-335T	335	ABSOLUTE 8 X 8 FILTERS
85	ID-RFO-336T	336	MOIST PAPER AND RAGS
86	ID-RFO-337T	337	PLASTICS, TEFLON, WASH, PVC
113	ID-RFO-338T	338	INSULATION AND CHEMICAL WARFARE SERVICE
133	ID-RFO-339T	339	LEADED RUBBER GLOVES AND APRONS
114	ID-RFO-360T	360	INSULATION
98	ID-RFO-371T	371	FIREBRICK
197	ID-RFO-374T	374	BLACKTOP, CONCRETE, DIRT, AND SAND
99	ID-RFO-375T	375	OIL-DRI RESIDUE FROM INCINERATOR
115	ID-RFO-376T	376	CEMENTED INSULATION AND FILTER MEDIA
225	ID-RFO-409T	409	MOLTEN SALTS - 30% UNPULVERIZED
226	ID-RFO-414T	414	DIRECT OXIDE REDUCTION SALT
220	ID-RFO-430T	430	UNLEACHED ION COLUMN RESIN
221	ID-RFO-431T	431	LEACHED RESIN
222	ID-RFO-432T	432	LEACHED AND CEMENTED RESIN
125	ID-RFO-440T	440	GLASS
126	ID-RFO-441T	441	UNLEACHED RASHIG RINGS
127	ID-RFO-442T	442	LEACHED RASHIG RINGS
87	ID-RFO-460T	460	WASHABLES, RUBBER, PLASTICS
134	ID-RFO-463T	463	LEADED RUBBER GLOVES AND APRONS
54	ID-RFO-464T	464	BENELEX AND PLEXIGLASS
150	ID-RFO-480T	480	NONSPECIAL SOURCE METAL
151	ID-RFO-481T	481	LEACHED NONSPECIAL SOURCE METAL
116	ID-RFO-490T	490	CHEMICAL WARFARE SERVICE FILTERS
66	ID-RFO-700T	700	ORGANIC AND SLUDGE IMMOBILIZATION SYSTEM
90	ID-RFO-900T	900	LOW SPECIFIC ACTIVITY PLASTICS, PAPER, E
169	ID-RFO-950T	950	LOW SPECIFIC ACTIVITY METAL, GLASS, ETC.
91	ID-RFO-970T	970	WOOD
70	ID-RFO-976T	976	BLDG 776 PROCESS SLUDGE
71	ID-RFO-978T	978	LAUNDRY SLUDGE --
46	ID-RFO-980T	980	EQUIPMENT
296	ID-RFO-9999T	9999	PRE-73 DRUMS

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
316	ID-TAN-200T	200	AMERICIUM SOURCES
327	ID-TRA-291T	*	TRU HEAVY METAL SLUDGE
Subtotal	115		
Transuranic Non-Mixed Waste			
763	CH-ANL-538	*	RSWF TRANSURANIC WASTE
786	CH-ANL-539	*	FCF TRU (CH) DISCARDED METAL DEBRIS
787	CH-ANL-540	*	FCF (RH) MISCELLANEOUS TRU WASTE
788	CH-ANL-541	*	FCF TRU (CH) COMBUSTIBLES
789	CH-ANL-542	*	ANL-752 TRU WASTE
790	CH-ANL-543	*	FCF TRU (CH) COMPACTIBLE WASTE
791	CH-ANL-544	*	FCF (RH) TRU GLASS-METAL WASTE
766	CH-ANL-HST	*	ANLW TRANSURANIC HAZARDOUS SCRAP
759	CH-ANL-SCTN	*	ANLW TRANSURANIC SCRAP
214	ID-BTO-012TN	12	MISCELLANEOUS SOURCES
215	ID-BTO-015TN	15	NEUTRON SOURCES
237	ID-BTO-050TN	50	SOLIDIFIED SOLUTIONS
154	ID-BTO-081TN	81	MET SAMPLES FISSILE
216	ID-INL-152TN	152	PU NEUTRON SOURCES
211	ID-INL-153TN	153	COMBUSTIBLE LAB WASTE
92	ID-MDO-804TN	804	PLASTIC, TYGON, MANIPULATOR BOOTS, ETC.
170	ID-MDO-825TN	825	NONCOMBUSTIBLE EQUIPMENT DRUMS
180	ID-RFO-115TN	115	GRAPHITE WASTE
224	ID-RFO-124TN	124	TRU PYROCHEMICAL SALT WASTE
181	ID-RFO-303TN	303	SCARFED GRAPHITE CHUNKS
182	ID-RFO-310TN	310	GRAPHITE SCARFINGS
183	ID-RFO-311TN	311	GRAPHITE HEELS
119	ID-RFO-361TN	361	INSULATION HEELS
184	ID-RFO-370TN	370	LECO CRUCIBLES
196	ID-RFO-372TN	372	GRIT
185	ID-RFO-391TN	391	CRUCIBLES AND SAND
186	ID-RFO-392TN	392	SAND, SLAG AND CRUCIBLES
187	ID-RFO-393TN	393	SAND, SLAG, AND CRUCIBLE HEELS
228	ID-RFO-410TN	410	MOLTEN SALTS - 30% PULVERIZED
229	ID-RFO-411TN	411	ELECTROREFINING SALT
230	ID-RFO-412TN	412	GIBSON SALTS
153	ID-RFO-416TN	416	ZINC MAGNESIUM ALLOY METAL

Table 6-1. (continued).

Key	Waste stream ID	Content code	Waste stream name
199	ID-RFO-420TN	420	VIRGIN INCINERATOR ASH
200	ID-RFO-421TN	421	ASH HEELS
201	ID-RFO-422TN	422	SOOT
202	ID-RFO-425TN	425	FLUID BED ASH
100	ID-RFO-960TN	960	CONCRETE, ASPHALT, ETC.
47	ID-RFO-995TN	995	SLUDGE
212	ID-TRA-154TN	154	SAMPLE FUEL
Subtotal	39		
Total	154		
Grand	250		

a. IMWI Database, September 1995.

6.2 Storage

Table 2 provides storage information for each wastestream. In addition to the above common fields, the following fields appear in this section:

Container Type — Type of container used for waste storage, i.e., drum, box, bin, insert.

Form — The physical form of the waste. A blank or the letter S denotes a solid waste. The letter L denotes a liquid waste.

Number of containers — Number of container within each container type.

Volume (m^3) — The estimated volume of the containers in cubic meters based on typical waste volumes for each container.

Mass (kg) — The estimated gross mass (container mass and mass of the waste).

At the INEL, stored TRU and ALLW wastes are tracked by two database systems: the Radioactive Waste Management Information System (RWMIS) and the Transuranic Waste Database (TWDB). RWMIS is thought to accurately represent the total quantity of waste in storage. However, it is missing content codes for many shipments, making it impossible to assign containers to a waste stream represented at the content code level. TWDB provides content code information for all containers identified in the database, but is missing a large percentage (~20%) of the total waste. Various studies have attempted to resolve the discrepancies between these two databases. For this report, the IMWI database, which reflects FFCA reporting information and resolves discrepancies between the RWMIS and TWDB, was used as the basis for

inventory information. This database reports inventory values by typical container type. The following typical container volumes (external) were used in estimates of gross waste volume:

Drum	0.212 m^3
Box	3.17 m^3
Bin	3.50 m^3
Insert	0.212 m^3

The IMWI cites a previous study which used TWDB and RWMIS reports to resolve known discrepancies, and found that the two databases are in good agreement except for the missing volume of waste (~20%) in TWDB.

The difference in waste quantity between RWMIS and the known content code quantities was calculated and assigned to a pseudo content code, 9999. A waste mass was calculated for this code by using the average density of all other content codes and the above calculated volume. This calculation assumes that content code 9999 composition is similar to the other waste with known content codes.

6.3 Waste Matrix Component Data

Table 3 contains estimated bulk waste matrix component information. Fields in addition to the common fields included in this section are:

Matrix code	A matrix code per DOE waste treatability group guidance, DOELLW-217, Rev 0, January 1995.
Component	Waste media or contaminant name.
Concentration low level	Estimated lower concentration level.
Concentration typical	Estimated typical concentration level.
Concentration upper level	Estimated upper concentration level.
Units	Concentration units.

6.4 Radionuclide Contaminant and Alpha Activity Concentration Data

Table 4 provides radionuclide and alpha activity waste characterization data as derived from analysis of the INEL TWDB database. This database reports radionuclide information at the container level with content code information making possible summaries at the waste stream level, however, it reports information for only two primary radionuclides. It should be noted that the radionuclide and activity information provided per waste stream may represent a subset of that waste stream and in total represents a subset of the total estimated activity as highlighted in section 6.2. However, the information does provide useful information primarily for the alpha activity. Reference should be made to Section 4 of this report for additional information on other radionuclides, information sources and activity.

The TRU alpha activity reported consists of alpha-emitting transuranium radionuclides (an alpha-emitting radionuclide having an atomic number greater than 92 and half-life greater than 20 years). All transuranium decay chain progeny classified as TRU are included. All activity calculations are based on a 15-year post purification date, or decay date. Fifteen years is a representative waste age average.

Values of gross mass presented in the tables are based on stored quantities for which radiological data are available. For this reason, these values may not agree with those reported in the storage inventory section. Gross mass refers to container mass plus waste mass. Waste mass refers to the mass of the waste only, and does not include the mass of the container. Both are provided in the event some of the waste may be treatable after container removal.

In addition, it should be noted that Pu-52 and Pu-83 are database nomenclature for weapons-grade plutonium (WG Pu) and heat-source plutonium (HS Pu), respectively. The reader is referred to Section 4 for the nominal isotopic compositions of these mixtures.

Information for each waste stream is divided into two major parts. The first part, Alpha Activity Concentration Profile, uses the transuranic alpha activity concentration intervals identified in Table 6-2. Since transuranic alpha activity concentration is currently the fundamental unit for classifying and managing defense-generated waste forms, these intervals were chosen to provide a more complete representation of the waste within a designated waste stream (content code). It should be noted that due to limitations of the nondestructive assay equipment, alpha activity concentrations below 100 nCi/g are not measured with a high degree of confidence. Therefore, the lowest interval used is

$0 \leq$ *TRU alpha activity concentration* < 100 *nCi/g.*

Because alpha low-level waste is by definition less than 100 nCi/g, all waste described in Appendix A (ALLW) is categorized within Interval 0.

In the second part, Isotopic Composition Profile, radionuclides present in the designated waste stream (content code) are identified. The mass (in grams) of each radionuclide is tabulated. In addition, the associated TRU alpha activity, non-TRU alpha activity, and total alpha activity are provided per gram of gross mass and per gram of waste mass, respectively, for each radionuclide. For explanation of the determination of TRU and non-TRU alpha activity, see Section 4 of this report.

The term "gross mass" is defined as the net container mass plus mass of the waste within the container. In contrast, "waste mass" is defined as the mass of the waste in the container. Waste mass does not include the mass of the container. In cases where liners or other packaging materials have been used, the weight of these materials is considered part of the waste mass. For conversion from gross mass to waste mass, the following empty container weights are commonly used:

Drum (55 gal)	50 lbs (22.7 kg)
Box (4 × 4 × 7 ft)	620 lbs (281.2 kg)
Bin (4.2 × 4.9 × 6 ft)	676 lbs (306.6 kg)

A brief description of each column heading used in Section E is provided below.

Alpha Activity Concentration Profile

Interval Number — Transuranic alpha activity concentration interval from Table 6-2.

Table 6-2. TRU alpha activity concentration intervals.[a]

Interval number			Interval description		
0			TRU alpha activity conc	<	100 nCi/g[b]
1	100 nCi/g	≤	TRU alpha activity conc	<	500 nCi/g
2	500 nCi/g	≤	TRU alpha activity conc	<	1,000 nCi/g
3	1,000 nCi/g	≤	TRU alpha activity conc	<	2,000 nCi/g
4	2,000 nCi/g	≤	TRU alpha activity conc	<	3,000 nCi/g
5	3,000 nCi/g	≤	TRU alpha activity conc	<	4,000 nCi/g
6	4,000 nCi/g	≤	TRU alpha activity conc	<	5,000 nCi/g
7	5,000 nCi/g	≤	TRU alpha activity conc	<	6,000 nCi/g
8	6,000 nCi/g	≤	TRU alpha activity conc	<	7,000 nCi/g
9	7,000 nCi/g	≤	TRU alpha activity conc	<	8,000 nCi/g
10	8,000 nCi/g	≤	TRU alpha activity conc	<	9,000 nCi/g
11	9,000 nCi/g	≤	TRU alpha activity conc	<	10,000 nCi/g
12	10,000 nCi/g	≤	TRU alpha activity conc	<	20,000 nCi/g
13	20,000 nCi/g	≤	TRU alpha activity conc	<	30,000 nCi/g
14	30,000 nCi/g	≤	TRU alpha activity conc	<	40,000 nCi/g
15	40,000 nCi/g	≤	TRU alpha activity conc	<	50,000 nCi/g
16	50,000 nCi/g	≤	TRU alpha activity conc	<	60,000 nCi/g
17	60,000 nCi/g	≤	TRU alpha activity conc	<	70,000 nCi/g
18	70,000 nCi/g	≤	TRU alpha activity conc	<	80,000 nCi/g
19	80,000 nCi/g	≤	TRU alpha activity conc	<	90,000 nCi/g
20	90,000 nCi/g	≤	TRU alpha activity conc	<	100,000 nCi/g
21	100,000 nCi/g	≤	TRU alpha activity conc	<	200,000 nCi/g
22	200,000 nCi/g	≤	TRU alpha activity conc	<	300,000 nCi/g
23	300,000 nCi/g	≤	TRU alpha activity conc	<	400,000 nCi/g
24	400,000 nCi/g	≤	TRU alpha activity conc	<	500,000 nCi/g
25	500,000 nCi/g	≤	TRU alpha activity conc	<	600,000 nCi/g
26	600,000 nCi/g	≤	TRU alpha activity conc	<	700,000 nCi/g
27	700,000 nCi/g	≤	TRU alpha activity conc	<	800,000 nCi/g
28	800,000 nCi/g	≤	TRU alpha activity conc	<	900,000 nCi/g
29	900,000 nCi/g	≤	TRU alpha activity conc	<	1,000,000 nCi/g
30	1,000,000 nCi/g	≤	TRU alpha activity conc	<	2,500,000 nCi/g
31	2,500,000 nCi/g	≤	TRU alpha activity conc	<	5,000,000 nCi/g
32	5,000,000 nCi/g	≤	TRU alpha activity conc	<	7,500,000 nCi/g
33	7,500,000 nCi/g	≤	TRU alpha activity conc	<	10,000,000 nCi/g
34	10,000,000 nCi/g	≤	TRU alpha activity conc		

a. EDF RWMC-716, 3/4/94.

b. TRU alpha activity concentration per gross mass (nCi/g).

TRU Alpha Activity Concentration	TRU alpha activity concentration interval description.
Interval Gross Mass (kg)	The total gross mass within the specified interval.
Interval Waste Mass (kg)	The total waste mass within the specified interval.
Isotopic Composition Profile	
Major Nuclide/Pu Mix	The major radionuclide(s) or plutonium mixture(s) reported present in the waste are identified. Radionuclides for which data are reported are shown in Section 4, Table 4-5. Pu-52 and Pu-83 are database nomenclature for weapons-grade plutonium (WG Pu) and heat-source plutonium (HS Pu), respectively. The reader is referred to Section 4, Table 4-6 for the nominal isotopic compositions of these mixtures.
Nuclide/Pu Mix Mass (g)	The mass, in grams, of the radionuclide or plutonium mixture present.
Nuclide/Pu Mix Mass per Gross Mass (g/g)	The concentration of the radionuclide or plutonium mixture in the waste (in grams) per gram of gross mass.
TRU Alpha Activity per Gross Mass (nCi/g)	The transuranic alpha activity concentration in the waste in nanocuries per gram of gross mass.
Non-TRU Alpha Activity per Gross Mass (nCi/g)	The nontransuranic alpha activity concentration in the waste in nanocuries per gram of gross mass.
Total Alpha Activity per Gross Mass (nCi/g)	The sum of TRU alpha activity mass plus non-TRU alpha activity per gross mass.
Nuclide/Pu Mix Mass per Waste Mass (g/g)	The concentration of the radionuclide of plutonium mixture in the waste in grams per gram of waste mass.
TRU Alpha Activity per Waste Mass (nCi/g)	The transuranic alpha activity concentration in the waste in nanocuries per gram of waste mass.
Non-TRU Alpha Activity per Waste Mass (nCi/g)	The nontransuranic alpha activity concentration in the waste in nanocuries per gram of waste mass.
Total Alpha Activity per Waste Mass (nCi/g)	Sum of the TRU alpha activity per waste mass and non-TRU alpha activity per waste mass.

6.5 EPA Hazardous Contaminant Data

Table 5 identifies hazardous constituents as defined under the Resource Conservation and Recovery Act (RCRA) reported to be present in the waste. Hazardous waste code number(s), associated hazardous waste descriptions, and baseline contaminant concentrations are reported to assist in treatment facility design. This section only includes mixed wastes.

In addition to the common fields, the following fields appear in this table.

Ucode	An INEL code used to link the EPA code with the RCRA category and subcategory.
EPA Code	The hazardous waste number [as defined in Title 40 of the Code of Federal Regulations Part 268 (40 CFR 268)] for the constituent reported.
Category	Hazardous waste description as defined in 40 CFR 268.
Subcategory	Treatment subcategory as defined in 40 CFR 268.
CAS #	Chemical abstract system number for chemical constituent.
Estimated Concentration (wt%)	Estimated concentration of constituent present in the waste.
Estimated Maximum Concentration (wt%)	Estimated maximum concentration of hazardous constituent present in the waste.

Source information used to identify the presence of contaminants was in accordance with the current INEL FFCA database and supporting documentation used for compliance of the Federal Facilities Compliance Act reporting requirements. Information provided to comply with these reporting requirements contained estimated listings of contaminants present in the waste; however, definitive information on contaminant concentrations present in the waste is not available at this time. Further document review for presence of contaminants resulted in the additional listing of some constituents in a few of the waste streams.

The concentration information presented in this table was derived from engineering review and estimation. Additional compilations and assumptions were made in order to expand and quantify concentration values and present bounding estimates. Confidence in the accuracy of the estimated concentration values is low, however this information is considered the best available at this time.

Estimated maximum concentrations are considered to represent bounding values for listed constituents with a margin of conservatism. The intent of this presentation is to provide a consistent basis for use in preparation and evaluation of proposals for treatment services. Waste stream or content code entries showing no concentration values indicate that no information was available.

7. INFORMATION FOR USE WHEN NO OTHER WASTE DATA OR INFORMATION ARE AVAILABLE

For some content codes, data may be unavailable. The lack of data may be for several reasons, including incomplete historical records, or data needs (i.e., presence of RCRA constituents) identified after waste collection and storage records were completed many years ago.

This section has been prepared to provide the reader with base case waste characterization data for use when no known data for a waste stream are available. These base case data are designed for use in waste treatment studies or other instances where a complete set of waste characterization data for the wastes are required. Use of these base case data will reduce assumptions or other conclusions drawn from an incomplete data set for these waste types.

A set of "design basis" data for the ALLW and TRUW is provided in this report section. This data provides information considered "typical" of the INEL stored mixed and non-mixed alpha low-level waste and mixed and non-mixed transuranic waste. The waste matrix/source characteristics of this base case are specified in a manner that reasonably approximates a significant fraction of the overall inventory population. For such base case data to be reasonable, consideration must be given to nominal matrix compositions, source mass, and source compositions. This has been accounted for in the preparation of this data. The resultant source mass and waste concentration data to be applied to empty record cases is reasonable in terms of the actual characteristics of the INEL stored wastes.

The base case data for the alpha low-level waste[a] presented in this report are based on a typical solidified waste form. Values are based on one 55-gallon sludge drum weighing 475 lbs (216 kg) gross mass, 400 lbs (182 kg) waste mass. The source composition of the sludge is comprised of a nominal WG Pu composition at 15 years post purification at a mass per container of 0.2 grams. In addition, the sludge contains a mixture of RCRA hazardous constituents, primarily organic chemicals. Design base case data are presented on pages 7-5 to 7-10.

The design case data for the transuranic waste[b] presented in this report are based on a typical drum filled with a heterogenous waste mixture of combustibles and lead. Values are based on one 55-gallon drum weighing 175 lbs (79.4 kg) gross mass, 100 lbs (45.5 kg) waste mass. The source composition is comprised of a nominal WG Pu composition at 15 years post purification at a mass per container of 2.5 grams. In addition, the waste contains lead, which is a RCRA hazardous constituent. Design base case data are presented on page 7-11 to 7-16.

It is suggested that the values in the base cases be used only where no data are available. Examples for use are shown as follows.

---

a. Design base case data for ALLW from M. L. Apel, G. K. Becker, Z. K. Ragan, J. Frasure, B. D. Raivo, L. G. Gale, and D. P. Pace, *Radiological, Physical and Chemical Characterization of Low-Level Alpha Contaminated Wastes Stored at the Idaho National Engineering* Laboratory, Idaho National Engineering Laboratory, EG&G Idaho, Inc., EGG-RWMC-11189, March 1994.

b. Design base case data for TRUW from M. L. Apel, G. K. Becker, Z. K. Ragan, J. Frasure, B. D. Raivo, L. G. Gale, and D. P. Pace, *Radiological, Physical and Chemical Characterization of Transuranic Wastes Stored at the Idaho National Engineering Laboratory,* Idaho National Engineering Laboratory, EG&G Idaho, Inc., EGG-RWMC-11190, March 1994.

Alpha low-level waste:

***Example 1*: The INEL waste stream ID-INL-155 does not report hazardous constituent data.**

Page 7-7 provides a listing of eight EPA Hazardous Waste Codes and associated data are provided. These data include an estimated concentration (wt%) and assumed maximum concentration (wt%) for each of these constituents.

To complete the waste characterization data for INEL waste stream ID-INL-155, the reader should use the chemical constituents, estimated constituent concentrations, and assumed maximum constituent concentrations provided on page 7-7.

This process is to be implemented for the remaining chemical constituents of interest.

$$DES\text{-}BASIS\text{-}ALLW\ Methanol\ Conc \times Gross\ Mass\ ID\text{-}INL\text{-}155 = Mass\ Methanol\ in\ ID\text{-}INL\text{-}155 \quad (7\text{-}1)$$

***Example 2*: The INEL waste stream ID-RFO-328 does not report alpha activity concentration or isotopic composition data.**

Pages 7-8 and 7-9 provide activity and composition data. In this profile sheet, one radionuclide mixture (Pu-52, weapons-grade plutonium) is identified. The TRU and non-TRU alpha activity concentration data for this contaminant are also provided using both a gross mass (216 kg) and waste mass (182 kg).

To complete the waste characterization data for INEL waste stream ID-RFO-328, the reader should use the design basis radionuclide mixture, Pu-52. To determine the mass of Pu-52 in ID-RFO-328, the Pu Mix Mass/Gross Mass concentration in ID-RFO-328 must be normalized to the respective Design Basis Case concentration. This normalization and determination of the associated mass of Pu-52 in ID-RFO-328 is done as follows:

$$Design\ Basis\ Pu\text{-}52\ concentration = \frac{Mass\ of\ Pu\text{-}52\ in\ DES\text{-}BASIS\text{-}ALLW}{Gross\ Mass\ in\ DES\text{-}BASIS\text{-}ALLW} \quad (7\text{-}2)$$

$$Design\ Basis\ Pu\text{-}52\ concentration \times Gross\ Mass\ ID\text{-}RFO\text{-}328 = Pu\text{-}52\ mass\ in\ ID\text{-}RFO\text{-}328 \quad (7\text{-}3)$$

In this example,

$$Design\ Basis\ Pu\text{-}52\ concentration = \frac{0.2\ g\ Pu\text{-}52}{216{,}000\ g\ Gross\ Mass} \quad (7\text{-}4)$$

$$Design\ Basis\ Pu\text{-}52\ concentration = 9.27E\text{-}07\ \frac{g\ Pu\text{-}52}{g\ Gross\ Mass} \quad (7\text{-}5)$$

$$9.27E\text{-}07\ \frac{g\ Pu\text{-}52}{g\ Gross\ Mass} \times 78{,}000\ g\ Gross\ Mass = 0.0702\ g\ Pu\text{-}52\ in\ ID\text{-}RFO\text{-}328 \quad (7\text{-}6)$$

Therefore the total alpha activity for ID-RFO-328 would be estimated as 5.74E+06 nanocuries by the following equation.

$$0.072\ g\ Pu\text{-}52 \times 7.977E\text{-}02\ \frac{Ci}{g\ Pu\text{-}52} \times 1.0E{+}09\ \frac{nCi}{Ci} = 5.74E{+}06\ nCi\ TRU\ \alpha\ activity \qquad (7\text{-}7)$$

To obtain the TRU alpha activity concentration, the TRU alpha activity computed above is divided by the gross mass in ID-RFO-328 as shown below. The conversion factor used to convert Pu-52 mass to TRU alpha activity (in Ci) is found in Table 4-6.

$$\frac{5.74E{+}06}{78{,}000}\ \frac{nCi\ TRU\ \alpha\ activity}{g\ Gross\ Mass\ ID\text{-}RFO\text{-}328} = 73.6\ \frac{nCi}{g\ Gross\ Mass} \qquad (7\text{-}8)$$

The non-TRU alpha activity per gross mass, TRU alpha activity per waste mass, and non-TRU alpha activity per waste mass are determined in a similar manner. Since the gross mass is the same, the total alpha activity per gross mass is determined by summing the TRU alpha activity per gross mass and the non-TRU alpha activity per gross mass. A parallel calculation is performed for the total alpha activity per waste mass.

***Example 3*: The INEL waste stream ID-RFO-000 does not report Waste Matrix Constituents data.**

Page 7-10 provides matrix data. In this profile sheet, an estimated typical matrix composition for a sludge drum is presented.

To complete the waste matrix constituent characterization data in waste stream ID-RFO-000, the reader should use the mass fraction data presented on page 7-10, Section F. For example, to compute the total mass of a given constituent in ID-RFO-000, the reader should multiply the respective Composition (wt%) value by the gross mass in ID-RFO-000. To illustrate:

$$Mass\ Oil\text{-}dri\ in\ ID\text{-}RFO\text{-}000 = Wt\%\ Oil\text{-}dri\ in\ DES\text{-}BASIS\text{-}ALLW \times Gross\ Mass\ in\ ID\text{-}RFO\text{-}000 \qquad (7\text{-}9)$$

$$600\ kg\ Oil\text{-}dri = 1.0\ Wt\% \times 60{,}000\ kg \qquad (7\text{-}10)$$

Note: This method will yield a rough estimate acceptable for use when no data are available. For the waste streams that contain composition data, the mass of the container and any liner is *not* included in the wt% breakdown.

Transuranic waste:

Information for the transuranic waste for when no data is identified in the profile sheets is obtained in a similar manner to the above examples, using the page 7-11 to 7-16 information.

A. IDENTIFICATION

INEL ID/Name: DES-BASIS N/A

C. Code/Name: ALLW Default Design Basis Information For Alpha Low Level Waste (Mixed or Non-mixed)

B. DESCRIPTION

INEL ID (WMIS) Description:
N/A

Total Volume (m3): .21

Gross Mass (kg): 215.46

Drum Equivalents: 1.00

Physical Form: SOLID

Physical Type: SLUDGE

PCBs: ☐

Combustibility:
- ☐ Combustible (>90%)
- ☒ Partially Combustible (10%-90%)
- ☐ Noncombustible (<10%)

Waste Type ☐ ALLW ☒ ALLMW ☐ TRUW ☐ TRUMW

Rad. Level ☒ Contact-Handled ☐ Remote-Handled

Content Code Description:
This Waste ID and Content Code represent a design basis set of information for the alpha low level (mixed or non-mixed) waste considered typical and for use when no other information is available.

C. STORAGE

	# of Cont.	Container Type	Total Vol. (m3)	Gross Mass (kg)	Waste Description
	1	DM	0.21	215.46	
Subtotal	1		0.21	215.46	
Total	1		.21 m3	215.46 kg	

1. Values in this table represent actual quantities in storage.
2. Gross mass = Net container mass + mass of waste. Volume is based on container estimated external volumes.

D. Design Basis EPA Contaminant Concentration Data

HAZARDOUS CONSTITUENTS

EPA Haz. Waste Code	Category	Chemical Constituent	Design Basis Information		
			CAS #	Estimated Concentration (wt%)	Assumed Max Concentration (wt%)
D002	CORROSIVE	ACID		0.5	1.0
F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,1-TRICHLOROETHANE	71-55-6	0.2	1.0
F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	0.5	1.0
F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	CARBON TETRACHLORIDE	56-23-5	5.0	10.0
F002	SPENT HALOGENATED SOLVENTS	METHYLENE CHLORIDE	75-9-2	0.1	1.0
F003	SPENT NON-HALOGENATED SOLVENTS	METHANOL	67-56-1	0.003	1.0
F003	SPENT NON-HALOGENATED SOLVENTS	N-BUTYL ALCOHOL	71-36-3	0.001	1.0
F003	SPENT NON-HALOGENATED SOLVENTS	XYLENES (TOTAL)	1330-20-7	0.005	1.0

E. Design Basis Radionuclide and Alpha Concentration Information

ALPHA ACTIVITY CONCENTRATION PROFILE

Interval Number	TRU Alpha Activity Concentration	Interval Gross Mass (kg)	Interval Waste Mass (kg)
0	nCi/g < 100	2.16E+02	1.82E+02
Totals		2.16E+02	1.82E+02

1. The TRU alpha activity concentration reported in this section consists of alpha-emitting transuranium radionuclides (a radionuclide having an atomic number greater than 92 and half-life greater than 20 years). All transuranium decay chain progeny classified as TRU are included. All activity calculations are based on a 15 year post purification date or decay date. Fifteen years is a representative waste age average.

2. Values may not agree with those reported in Section C since values in this table are based on stored waste quantities for which radiological data are available.

3. Pu-52 and Pu-83 are database nomenclature for weapons grade plutonium (WG Pu) and heat source plutonium (HS Pu), respectively. See Section 2 Table 2.2 for the nominal isotopic compositions.

4. Gross Mass=Container net mass + waste mass. Waste Mass = Mass of Waste only.

E. Design Basis Radionuclide and Alpha Activity Concentration Information, Cont'd.

ISOTOPIC COMPOSITION PROFILE

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.00E-01	9.27E-07	7.40E+01	3.89E-03	7.40E+01	1.10E-06	8.78E+01	4.62E-03	8.79E+01

F. Design Basis Bulk Waste Materials

WASTE MATRIX CONSTITUENTS

PHYSICAL/CHEMICAL COMPOSITION

Major Category	Minor Category	Constituent	Composition (wt%)
Non- Combustible (<10% Combustible)	Glass -	Glass Rasching Rings	
		Other Glass	
	Metals -	Carbon Steel	
		Stainless Steel	
		Aluminum (AL)	
		Tantalum 10W	
		Miscellaneous Metal	
		Lead (Bulk Pb)	
		Other HVPM(Zn,Cd)	
	Misc. Non-Combustible -	Ceramic (molds)	
		Firebrick	
		Concrete	
		Portland Cement	
		Dirt/Soil	
		Ash	
		Oil-dri	1.0
		Vermiculite	0.3
		Salts	
	Filters/Insulation -	Glass Filter Media	
		Asbestos (filter, insulation)	
		Filter Dust	
		Magnesia (insulations)	
	Inorganic Sludge -	Sludge High Na2O (1st Stage)	
		Sludge High CaO (2nd Stage)	
		Aqueous Solutions	
Partial Combustible (10%-90% Combustible)	Partially Combustible -	Leaded Rubber	
		Organic Sludge	97.6
		Uncemented Resin	
		Cemented Resin	
		Asphalt	
		Benelex/lead	
		Sheetrock	
Combustibles (>90% Combustible)	Plastics -	Polyethylene	0.9
		Polyvinyl Chloride (PVC)	0.2
		Teflon	
		Plexiglass	
	Rubber -	Rubber	
		Surgeons' Glove	
	Misc. Combustibles -	Graphite (molds)	
		Paper	
		Wood	
		Cardboard	
		Cloth	

A. IDENTIFICATION

INEL ID/Name: DES-BASIS N/A

C. Code/Name: TRUW Default Design Basis Information For Tranusranic Waste (Mixed or Non-mixed)

B. DESCRIPTION

INEL ID (WMIS) Description:
N/A

Total Volume (m3): .21

Gross Mass (kg): 79.38

Drum Equivalents: 1.00

Physical Form: SOLID

Physical Type: OTHER

PCBs: ☐

Combustibility:
- ☐ Combustible (>90%)
- ☒ Partially Combustible (10%-90%)
- ☐ Noncombustible (<10%)

Waste Type
☐ ALLW ☐ ALLMW ☐ TRUW ☒ TRUMW

Rad. Level
☒ Contact-Handled ☐ Remote-Handled

Content Code Description:
This Waste ID and Content Code represent a design basis set of information for the transuranic waste (mixed or non-mixed) considered typical and for use when no other information is available.

C. STORAGE

	# of Cont.	Container Type	Total Vol. (m3)	Gross Mass (kg)	Waste Description
	1	DM	0.21	79.38	
Subtotal	1		0.21	79.38	
Total	1		.21 m3	79.38 kg	

1. Values in this table represent actual quantities in storage.
2. Gross mass = Net container mass + mass of waste. Volume is based on container estimated external volumes.

D. Design Basis EPA Contaminant Concentration Data

HAZARDOUS CONSTITUENTS

EPA Haz-Waste Code	Category	Chemical Constituent	Design Basis Information		
			CAS #	Estimated Concentration (wt%)	Assumed Max Concentration (wt%)
D008	LEAD		7439-92-1	20.0	30.0

E. Design Basis Radionuclide and Alpha Activity Concentration Information

ALPHA ACTIVITY CONCENTRATION PROFILE

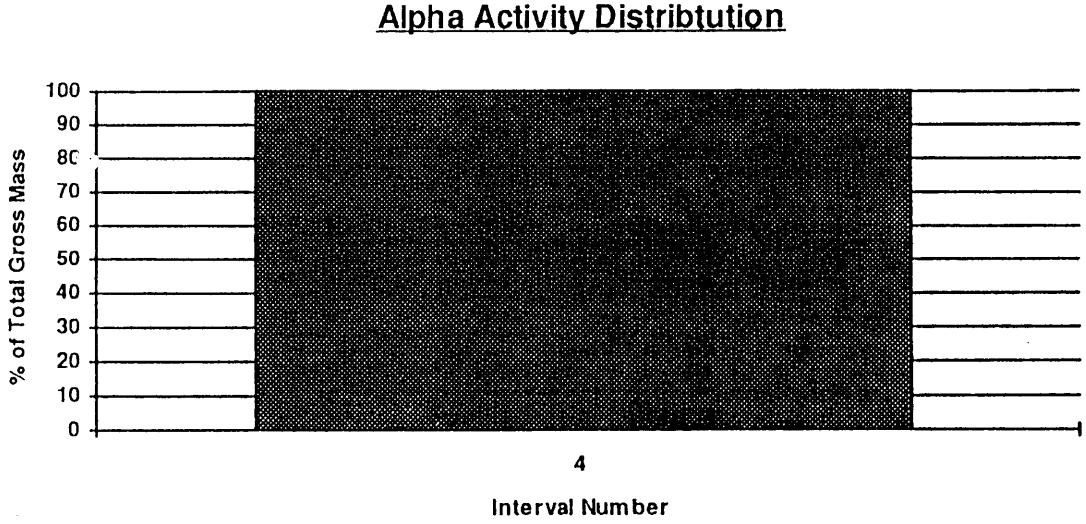
Interval Number	TRU Alpha Activity Concentration	Interval Gross Mass (kg)	Interval Waste Mass (kg)
4	2,000 <= nCi/g < 3,000	7.96E+01	4.55E+01
Totals		7.96E+01	4.55E+01

1. The TRU alpha activity concentration reported in this section consists of alpha-emitting transuranium radionuclides (a radionuclide having an atomic number greater than 92 and half-life greater than 20 years). All transuranium decay chain progeny classified as TRU are included. All activity calculations are based on a 15 year post purification date or decay date. Fifteen years is a representative waste age average.

2. Values may not agree with those reported in Section C since values in this table are based on stored waste quantities for which radiological data are available.

3. Pu-52 and Pu-83 are database nomenclature for weapons grade plutonium (WG Pu) and heat source plutonium (HS Pu), respectively. See Section 2 Table 2.2 for the nominal isotopic compositions.

4. Gross Mass=Container net mass+waste mass. Waste Mass = Mass of Waste only.



E. Design Basis Radionuclide and Alpha Activity Concentration Information, Cont'd.

ISOTOPIC COMPOSITION PROFILE

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.50E+00	3.14E-05	2.51E+03	1.32E-01	2.51E+03	5.50E-05	4.39E+03	2.31E-01	4.39E+03

F. Design Basis Bulk Waste Materials

WASTE MATRIX CONSTITUENTS

PHYSICAL/CHEMICAL COMPOSITION

Major Category	Minor Category	Constituent	Composition (wt%)
Non- Combustible (<10% Combustible)	Glass -	Glass Rasching Rings	
		Other Glass	
	Metals -	Carbon Steel	
		Stainless Steel	
		Aluminum (AL)	
		Tantalum 10W	
		Miscellaneous Metal	
		Lead (Bulk Pb)	20.0
		Other HVPM(Zn,Cd)	
	Misc. Non-Combustible -	Ceramic (molds)	
		Firebrick	
		Concrete	
		Portland Cement	
		Dirt/Soil	
		Ash	
		Oil-dri	
		Vermiculite	
		Salts	
	Filters/Insulation -	Glass Filter Media	
		Asbestos (filter, insulation)	
		Filter Dust	
		Magnesia (insulations)	
	Inorganic Sludge -	Sludge High Na2O (1st Stage)	
		Sludge High CaO (2nd Stage)	
		Aqueous Solutions	
Partial Combustible (10%-90% Combustible)	Partially Combustible -	Leaded Rubber	
		Organic Sludge	
		Uncemented Resin	
		Cemented Resin	
		Asphalt	
		Benelex/lead	
		Sheetrock	
Combustibles (>90% Combustible)	Plastics -	Polyethylene	40.0
		Polyvinyl Chloride (PVC)	
		Teflon	
		Plexiglass	
	Rubber -	Rubber	
		Surgeons' Glove	
	Misc. Combustibles -	Graphite (molds)	
		Paper	40.0
		Wood	
		Cardboard	
		Cloth	

8. WASTE PRESENT STORAGE LOCATION AND RETRIEVAL INFORMATION

The information provided in this section is based on information in the feasibility study SOW (1993),[a] and work by Raivo (1994),[b] Wixson (1995)[c] and Barnard (1993).[d]

8.1 SITE DESCRIPTION

8.1.1 INEL RWMC Site Background

The RWMC, Figures 8-1 and 8-2, consists of two main areas, the Subsurface Disposal Area (SDA) and Transuranic Storage Area (TSA). Solid waste generated by INEL operations and wastes received from offsite generators are routed to smaller specialized locations within these areas depending on content and packaging. In addition, support facilities are provided for the administration, operational, and utility requirements of the RWMC.

8.1.2 Existing Alpha-contaminated Waste Capability

The RWMC was the first DOE facility to achieve waste examination and certification authority for stored TRU waste. The Stored Waste Examination Pilot Plant (SWEPP) provides nondestructive examination (NDE) and nondestructive assay (NDA) capabilities to evaluate waste form compliance with transportation and disposal facility waste acceptance criteria (WAC). The SWEPP, which conducts weighing, real-time radiography, neutron and gamma assay, and container integrity determination, began operations in August 1985. The Drum Venting Facility (DVF) began operations in May 1987. This facility provides capability for remote installation of a carbon composite filter in waste drums to allow pressure equalization and aspiration of radiolytic- and corrosion-generated hydrogen. In August 1990, the RWMC was the first DOE facility to obtain approval to use the TRU Package Transporter (TRUPACT)-II for shipping TRU waste.

Two air support buildings provide accessible storage for approximately 18 percent of the total stored inventory. Recently constructed Type I and Type II Storage Modules provide RCRA compliance storage capacity. Transfer of the waste presently in the Air Support building to the storage modules is currently ongoing. The remaining 82 percent of the total volume is under earthen or geofabric cover.

8.1.3 Sources of Alpha-contaminated Waste

Transuranic wastes stored within the TSA were generated by operations conducted for the U.S. Atomic Energy Commission (AEC), now the U.S. Department of Energy (DOE), and its successor agencies. The

---

a. Statement of Work for a Feasibility Study on Treatment Services for Alpha Contaminated Mixed Low-Level Wastes (December 15, 1993), RFP No. DE-RP07-94ID13278, December 20, 1993.

b. B. D. Raivo, *Waste Container Description Information for ALLW Treatment Services Feasibility SOW*, EDF PSPI-015546-03, January 5, 1994.

c. J. R. Wixon, Estimated Earthen and Geofabric Covered TRU Waste Inventory in the TSA of the Radioactive Waste Management Complex (RWMC), INEL-95/194, RWMC EDF #837, August 24, 1995.

d. C. J. Barnard, *Inventory Analysis of Stored Transuranic (TRU) Waste at the Radioactive Waste Management Complex (RWMC) (Preliminary)*, WM-PD-90-003, Rev. 1, August 31, 1993.

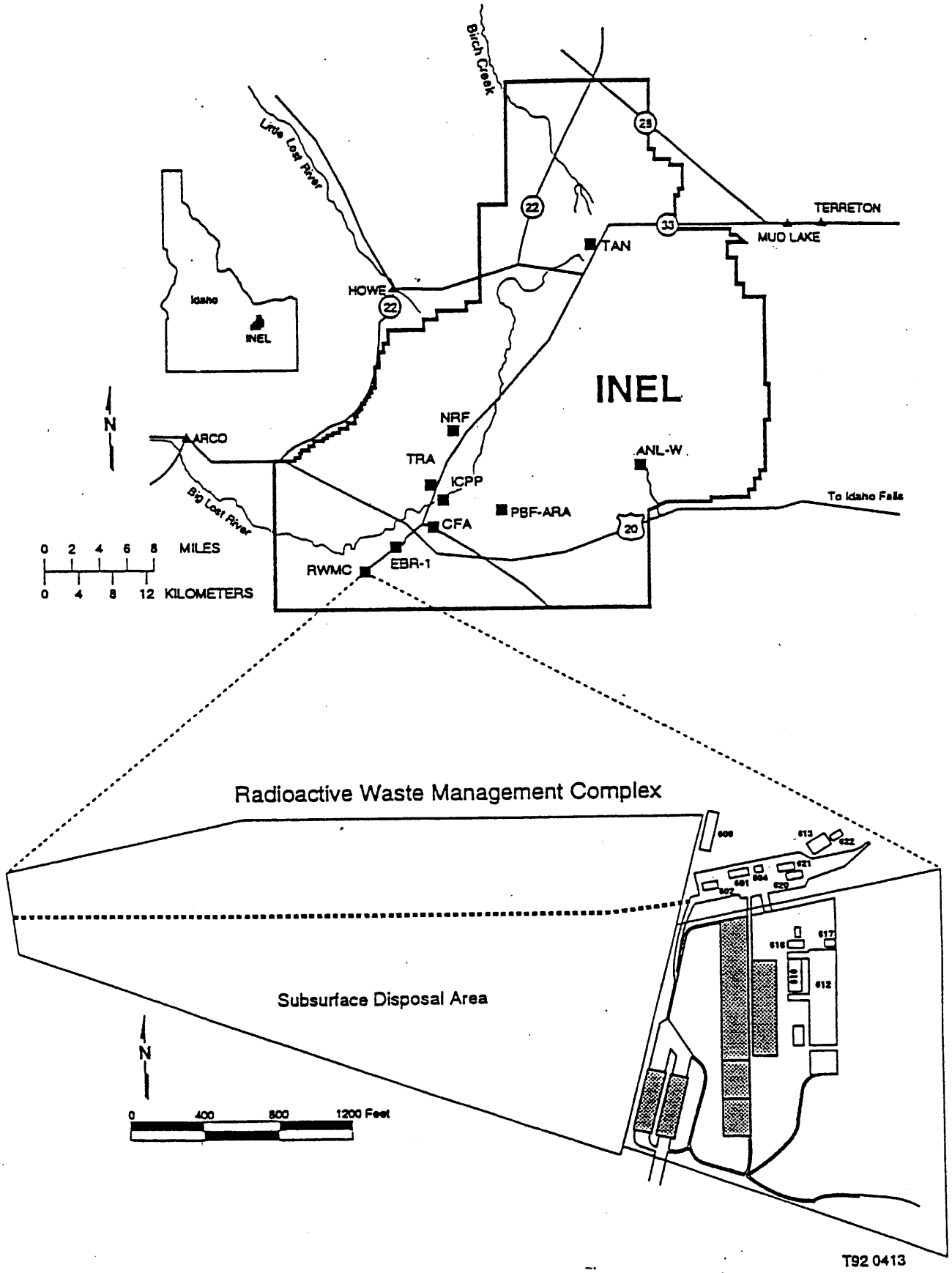


Figure 8-1. Map of the Transuranic Storage Areas (TSA) of the RWMC at the INEL.

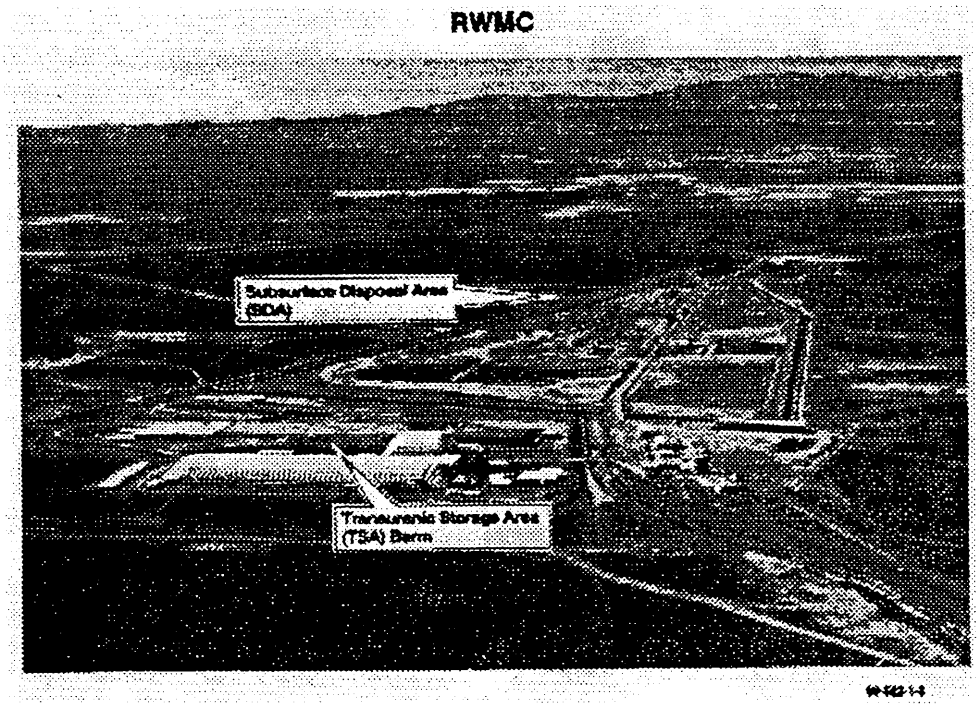


Figure 8-2. Aerial Photo of RWMC.

following facilities have generated the majority of the TRU wastes placed in storage on the TSA: Rocky Flats Plant, Golden, Colorado; Mound Laboratory, Miamisburg, Ohio; Battelle Columbus Laboratories, Columbus, Ohio; Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania; and Argonne National Laboratory-East, Argonne, Illinois. Small volumes of alpha-contaminated waste have also been generated by INEL operations. In addition, the INEL Initial Drum Retrieval (IDR) and Early Waste Retrieval (EWR) projects have contributed to waste placed in storage at the TSA.

8.1.4 Subsurface Disposal Area

From 1952 to 1970, wastes consisting of solid transuranic (TRU) contaminated wastes and low-level wastes (LLW) were buried in a series of pits and trenches located in the area now known as the Subsurface Disposal Area (SDA) located within the RWMC.

In 1970, above-ground storage of TRU contaminated waste was initiated at the Transuranic Storage Area (TSA) at the RWMC. The SDA was the site for two waste retrieval study programs: Early Waste Retrieval (EWR) for pre-1964 wastes, and Initial Drum Retrieval (IDR) for drum-packaged wastes buried between 1968 and 1969. Recovered waste from these studies is stored on the Transuranic Storage Area-Retrieval (TSAR) pad located within the TSA.

8.1.5 Transuranic Storage Area

The TSA is a 55-acre area located adjacent to the SDA along its eastern boundary. Enclosed by a 7-ft security fence, it was originally used for retrievable storage of waste contaminated with greater than 10 nCi/g of transuranic activity per gram of waste. This limit was changed to greater than 100 nCi/g for transuranic activity per gram of waste, as defined in DOE Order 5820.2A. This area has the following specialized storage locations:

- TSA-1 and TSA-2 asphalt-surface/earthen-covered storage pads (typical cell arrangement for retrievable storage of waste is depicted in Figure 8-3)
- TSA-3 asphalt-surface/air-supported building storage pad for examined wastes
- TSA-R asphalt-surface/earthen-covered storage pad
- An Intermediate-Level Transuranic Storage Facility (ILTSF) with engineered vaults
- Type I and Type II Storage Modules.

8.1.6 Support Facilities

The RWMC is divided into several sections. Each section is supported by various personnel and support facilities which are described in the following sections.

8.1.7 Buildings

Several buildings are clustered adjacent to the SDA and the TSA in the northwest corner of the RWMC. Buildings include facilities for Health Physics offices, material storage areas, operations support facilities, domestic and firewater supply systems, emergency generators, personnel change areas and lunch facilities, and heavy and mobile equipment storage. A guard house is located at the entrance to the RWMC. Figure 8-3 shows buildings recently constructed or planned for construction in support of retrieval efforts. The Retrieval Enclosure (Figure 8-4) currently being constructed over the bermed pads will enable year round controlled retrieval of the earthen covered waste.

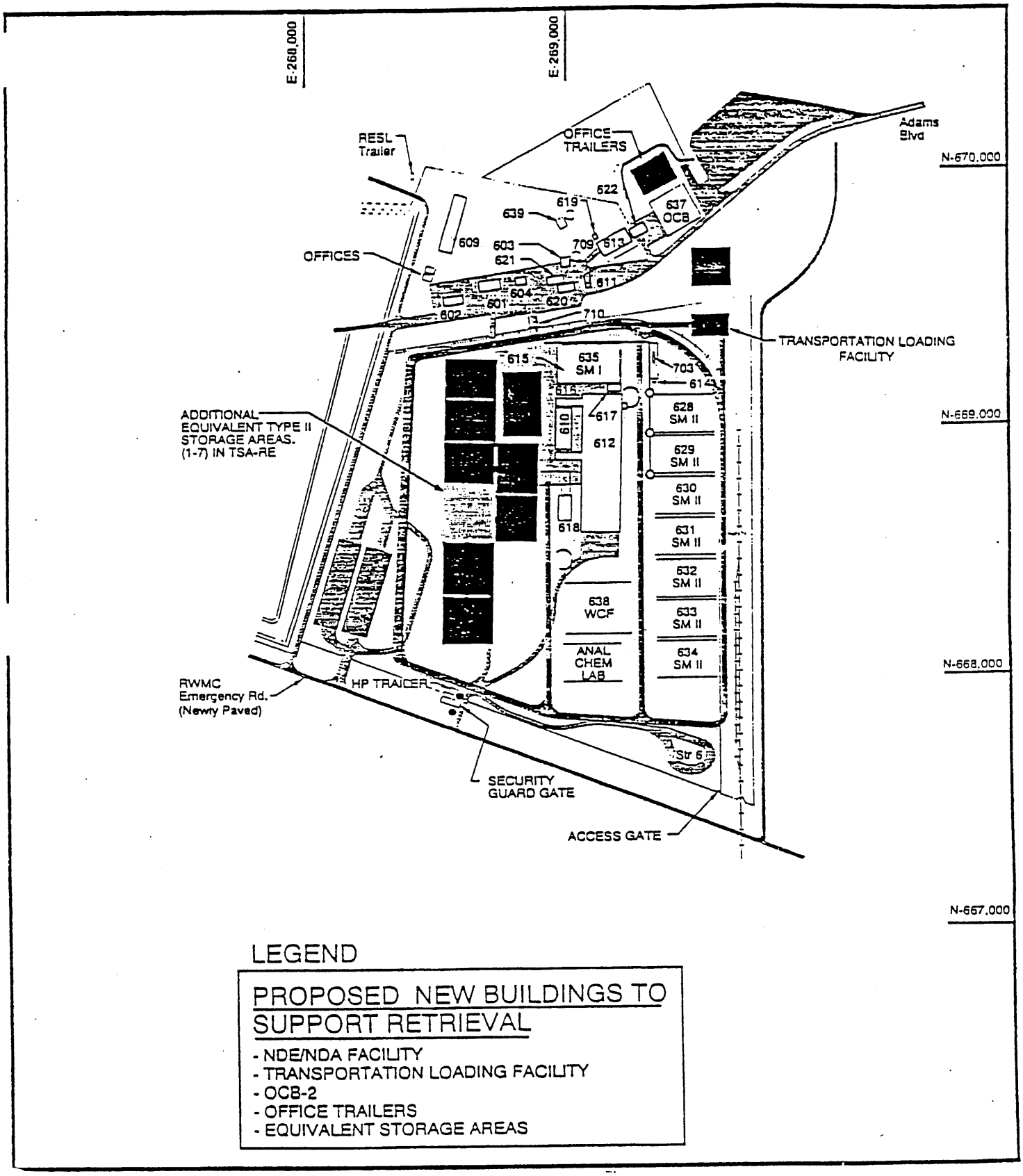


Figure 8-3. Transuranic Storage Area at the RWMC.

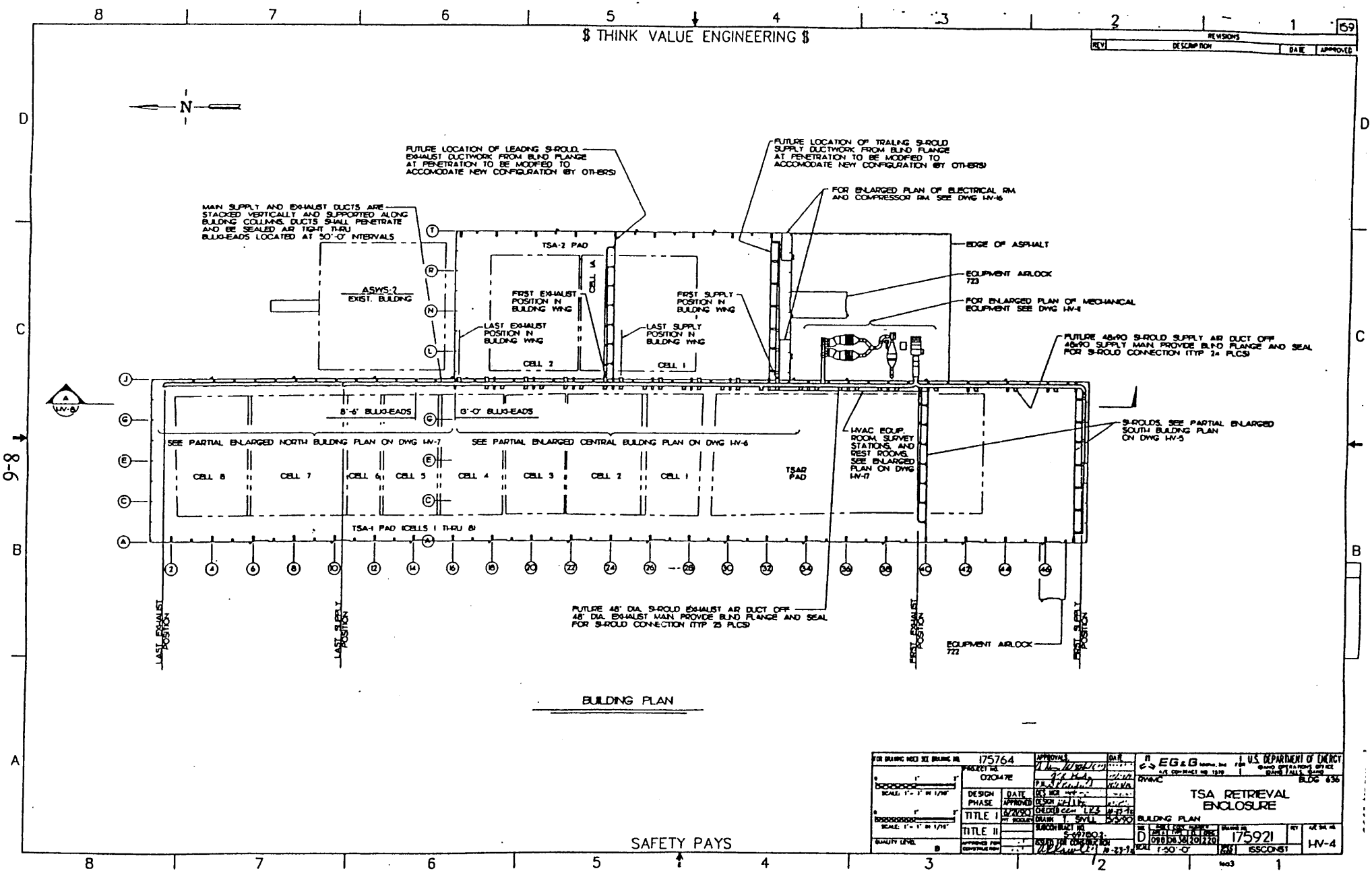


Figure 8-4. TSA Retrieval Enclosure.

Recently constructed are the Type I and Type II storage modules. The function and purpose of these facilities are:

- Type I storage modules are temporary holding modules (buildings) for receiving containers retrieved from current storage. The functions of these modules include venting drums/containers, holding drums/containers for a minimum aspiration period, obtaining gas samples for analysis, and data entry into a database tracking system (barcode).

- Type II storage modules are state-approved RCRA storage modules for added storage capacity and longer-term storage.

Currently under construction is the Retrieval Enclosure (Figure 8-4). The function and purpose of this facility is to:

- Enclose the earthen-covered pads with a facility capable of controlled ventilation and a structure sufficient to enable year round retrieval of the earthen-covered waste.

Planned for or considered for future construction are the Waste Characterization Facility (WCF), and the Operations Control Building (OCB), a Nondestructive Examination/Nondestructive Assay (NDE/NDA) facility, and a transportation loading facility . The function and purpose of these facilities are:

- The Operations Control Building is a new personnel facility for general operations control and administration.

- The Waste Characterization Facility (WCF) is a new facility being considered for the purpose of ensuring the Waste Isolation Pilot Plant waste acceptance criteria (WIPP WAC) is met for the transuranic waste stream (TRU $\geq$ 100 nCi/g) destined for WIPP permanent storage. The function of the facility is for opening, characterizing, and repackaging sample containers (drums, boxes, and bins) from the transuranic waste stream. Selected containers in the alpha-contaminated low-level (mixed) waste (ALLW/ALLMW) waste stream may also be processed through this facility for additional characterization required to meet statistical sampling requirements for retrieval and packaging of the stored waste. The WCF may also be used for statistical sampling of the returned treated waste forms to verify compliance to Treated Waste Acceptance Criteria.

- A new NDE/NDA facility is being considered to increase current assay, radiography and throughput capability at the RWMC, and meet DOT transportation requirements for transport of waste inventories.

- A transportation loading facility is being considered to enable enhanced loading of transport packaging and transport vehicles.

8.1.8 Railroad Spur

A single-track railroad spur from the Union Pacific Railroad, Mackay line, permits direct rail shipments from offsite generators to the TSA. The dual-track siding at the TSA provides some limited switching capability.

8.1.9 Stored Waste Examination Pilot Plant (SWEPP) (NDE/NDA Facility)

The main purpose of the existing SWEPP facility is to certify contact-handled (CH) TRU waste stored in the TSA-1, TSA-2, and the TSA-R. The SWEPP building, WMF-610, houses the SWEPP examination equipment, data management system equipment and offices for SWEPP operations personnel. Waste drums are vented in building WMF-615 prior to being examined in the SWEPP facility.

8.1.10 Trupact Loading Station (TLS)

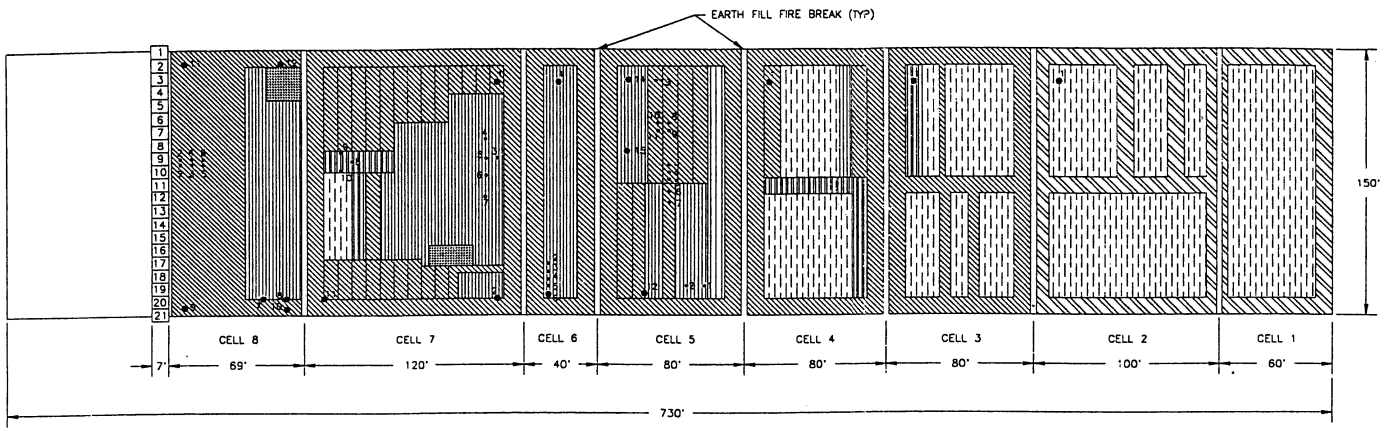
The TLS was designed and constructed at the RWMC/SWEPP Facility to support loading of the TRUPACT-II casks for WIPP transport. Construction of the TLS was completed in September 1988. Since completion of construction, all ancillary hardware such as the adjustable center of gravity lift fixture (ACGLF) and stretch-wrap machine have been installed and tested.

8.2 Current Storage and Waste Characterization Information

Approximately 80 percent of the estimated 65,000 cubic meters of waste is contained within earthen-covered berms. These berms are identified as Pad 1, Pad 2, and Pad R. Within each pad are sections identified as cells. Figures 8-5, 8-6, and 8-7 are drawings of Pads 1, 2, and R showing cell locations within each Pad. Figure 8-8 presents a picture of a bermed pad showing typical TSA waste in retrievable storage. The waste was typically transported to the RWMC via ATMX rail cars as shown and unloaded via a crane into the cell locations. Figures 8-9 and 8-10 show typical waste packed in boxes and drums respectively.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
C	REPLACES REV B WITH CHANGE SEE C DCN	10/23/90	GRB

RELEASED FOR USE
Drawing Status Verified with Engineering Document Control at (208) 526-1202 or 526-1206
Date 6/26/95 By Barry Scott



PIPE LEGEND		PIPE LEGEND	
PIPE NO.	LENGTH	PIPE NO.	LENGTH
2-1	19'-6"	8-7	14'-0"
3-1	19'-10"	8-8	17'-4"
4-1	18'-11"	8-9	AIR
5-1	17'-6" AIR	8-10	AIR
5-2	20'-0" AIR	8-11	AIR
5-3	12'-0"	8-12	AIR
5-4	15'-0"		
5-5	18'-0"		
5-6	21'-0"		
5-7	24'-0"		
5-8	20'-0"		
5-9	14'-0"		
5-10	11'-0"		
5-11	17'-0"		
5-12	20'-0"		
5-13	20'-0" AIR		
5-14	20'-0"		
5-15	24'-0"		
6-1	20'-0"		
6-2	17'-0"		
6-3	20'-0"		
6-4	14'-0"		
6-5	11'-0"		
6-6	20'-0"		
7-1	20'-0"		
7-2	20'-0"		
7-3	20'-0"		
7-4	17'-0"		
7-5	11'-0"		
7-6	8'-0"		
7-7	14'-0"		
7-8	20'-0"		
7-9	17'-0"		
7-10	14'-0"		
7-11	20'-0"		
8-1	18'-0"		
8-2	15'-0"		
8-3	24'-0"		
8-4	24'-0"		
8-5	11'-0"		
8-6	21'-0"		

LEGEND

- WOOD STORAGE BOXES
- FIBERGLASS COVERED WOOD STORAGE BOXES
- 55 GAL. DRUMS STACKED HORIZONTAL
- 55 GAL. DRUMS STACKED VERTICAL
- 83 GAL. DRUMS STACKED VERTICAL
- METAL STORAGE BIN

PERFORATION ARE FROM 1' TO 2' ABOVE BOTTOM OF PIPE

- *3" INSTRUMENT PIPE*
- *8" AIR CIRCULATION PIPE*

CELL INFORMATION

CELL	SIZE	DATE OPENED	DATE CLOSED	55 GAL. DRUMS	30 GAL. DRUMS	83 GAL. DRUMS	4'X4'X7' WOOD BOXES	4'X4'X7' WOOD/FIBER GLASS BOXES	4'X5'X6' METAL BINS	ODD SIZE METAL CONTAINERS	ODD SIZE WOOD/FIBER GLASS BOXES	TOTAL VOLUME M^3 WASTE
1	60' X 150'	11-1-70	5-8-71	9093	54	0	295	0	0	0	28	2804
2	100' X 150'	5-19-71	12-27-71	12682	48	0	602	0	0	3	0	4571
3	80' X 150'	12-15-71	6-5-72	9505	0	432	0	539	0	1	52	3994
4	80' X 150'	6-5-72	1-15-73	8841	20	994	0	380	0	6	120	3574
5	80' X 150'	12-22-72	6-20-73	4059	0	0	0	785	0	8	45	3422
6	40' X 150'	5-24-73	11-7-73	3658	0	0	0	308	0	7	10	1893
7	120' X 150'	11-7-73	1-23-75	7918	0	414	0	1076	48	0	0	5391
8	70' X 150'	4-24-74	10-25-75	7309	0	*	0	466	35	3	0	3249
X	RETAINING WALL									21**		
TOTALS				63065	122	1840	897	3554	83	28	255	28,898

* - INCLUDED IN TOTAL WITH 55 GAL. DRUMS
** - 21 CONCRETE ENCASSED RESIN VAULTS (NON-TRANSURANIC) USED AS A RETAINING WALL - NOT INCLUDED IN TOTAL.

Figure 8-5. Composite layout of TSA-1 extracted from Drawing Number 1375-BFG-705-2.

QTY. REQD	QUAL. LEVEL	PART OR IDENTIFYING NO.	DESCRIPTION/MATERIAL/SPECIFICATION	ITEM/ FIND
			PARTS LIST	

DIMENSIONING AND STANDARD: AMERICAN NATIONAL STANDARD
UNLESS OTHERWISE SPECIFIED: SURFACE ROUGHNESS 125; DIMENSIONS AND TOLERANCES ARE IN INCHES; TOLERANCES: X ± .1, DECIMALS: XX ± .03, XXX ± .010; FRACTIONS ± 1/8; ANGULAR ± 2°
DO NOT SCALE DRAWING

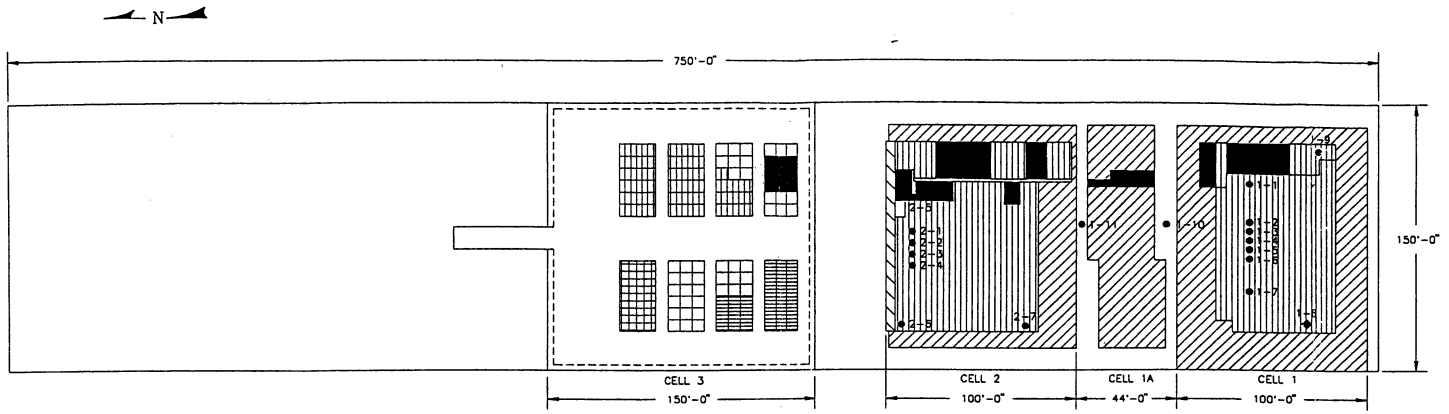
NEXT ASSY/REF DWG | P.M.
DES. MGR. JAH 1-27-75 | DSGN.
SAFETY | QUAL.
DESIGN | DATE
CHECKED R MACFEE | DATE 1-27-75
DRAWN A L CARLSON | DATE 8-13-90
RELEASE PAP | DATE 1-27-75
SCALE NONE

EG&G Idaho, Inc.

I.N.E.L.
TRANSURANIC STORAGE
AREA PAD NO. 1

SIZE D | WBS COST NUMBER AREA TYPE OC SEQ 0981765 | DRAWING NO. 155663 | REV C
APPD. DATE

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
C	REPLACES REV B WITH CHANGE. SEE C DCN	10/23/90	GRB



PIPE LEGEND	
PIPE NO.	LENGTH
1-1	20'-0"
1-2	8'-6"
1-3	11'-0"
1-4	14'-0"
1-5	17'-0"
1-6	20'-0"
1-7	15'-0"
1-8	AIR
1-9	AIR
1-10 *	——
1-11 *	——
2-1	8'-0"
2-2	8'-0"
2-3	8'-0"
2-4	8'-0"
2-5	AIR
2-6	AIR
2-7	AIR

PERFORATIONS ARE FROM 1" TO 2" ABOVE BOTTOM OF PIPE

* SOIL MOISTURE PROBE

LEGEND

- WOOD STORAGE BOXES
- FIBERGLASS COVERED WOOD STORAGE BOXES
- TX4 BOXES (ON SITE LEAD)
- 55 GAL. DRUMS STACKED HORIZONTAL
- 55 GAL. DRUMS STACKED VERTICAL
- METAL STORAGE BIN
- MISC. BOXES

RELEASED FOR USE
Drawing Status Verified with Engineering Document Control at (208) 526-1202 or 526-1206
Date 6/26/95 By Barry Scott

Cell Information for TSA Pad-2

Cell	Size (meters)	Date Opened	Date Closed	208-1 Drums	113-1 Drums	314-1 Drums	1.51 m3 Fiberglass	3.02 m3 Fiberglass	Odd Size	2.81 m3 Bins	Odd Size	Total Volume cubic meters
1	34 x 43	09/75	12/77	8590	0	0	0	740	0	78	17	4406
1A	13 x 40	07/80	07/80	0	0	0	8	636	3	9	0	2067
2	30 x 39	12/77	07/80	8652	0	0	0	404	0	147	0	3571
Sub-Totals				17242	0	0	8	1780	3	234	17	10044

Cell	Size (meters)	Date Opened	Date Closed	208-1 Drums	113-1 Drums	314-1 Drums	1.51 m3 Fiberglass	3.02 m3 Fiberglass	4.25 m3 TX-4	2.81 m3 Bins	3.20 m3 Misc.	Total Volume cubic meters
ASB2	46 x 46	08/80		6001	0	0	0	0	38	50	92	1891
Sub-Totals				6001	0	0	0	0	38	50	92	1891
Totals				23243	0	0	8	17720	3 38	284	17 92	11935

NOTES:

1. METAL CARGO CONTAINERS AND STORAGE BINS CONTAIN RETRIEVED TRU WASTE.

QTY. REQD.	QUAL. LEVEL	PART OR IDENTIFYING NO.	DESCRIPTION/MATERIAL/SPECIFICATION	ITEM/FIND

PARTS LIST

CHEVRONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED
SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: .X = ± .1, .XX = ± .03, .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

NEXT ASSY/REF DWG
P.M. JHN 11-16-84
DES. MGR.
OPER.
SAFETY
QUAL.
DESIGN R W PASSMORE DATE 5-17-83
CHECKED R W PASSMORE DATE 5-17-83
DRAWN A L CARLSON DATE 8-13-90
RELEASE DMR DATE 5-17-83

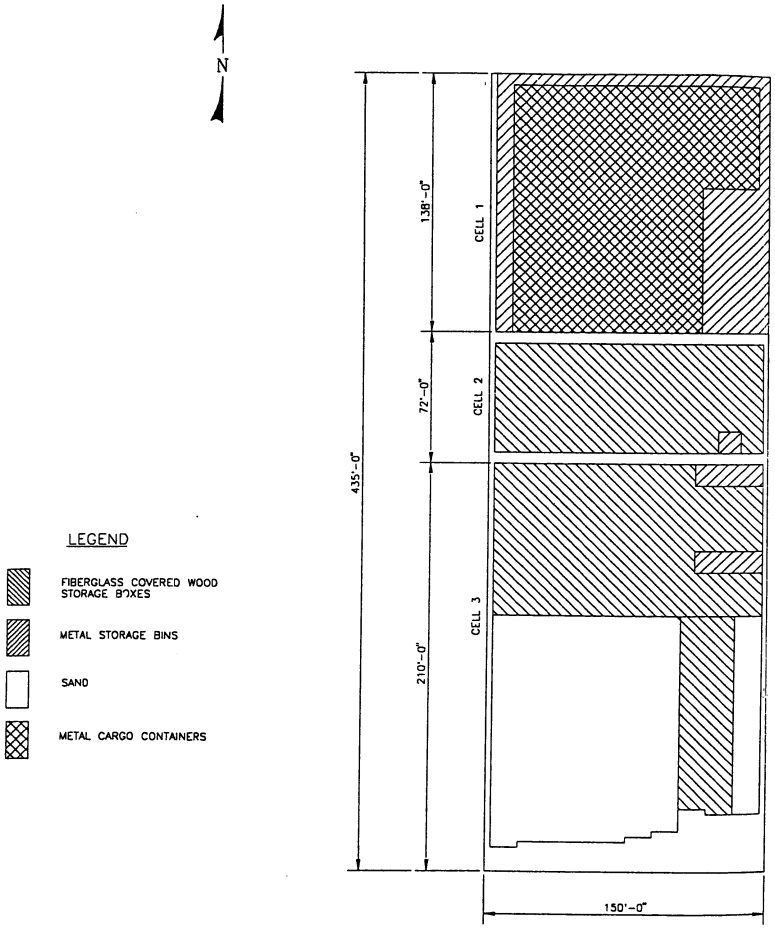
EG&G Idaho, Inc.

INEL
TRANSURANIC STORAGE AREA
PAD NO. 2

SIZE D | INDEX CODE NUMBER: AREA 098, TYPE 0705, CL 38, ORIG 220 | DRAWING NO. 418323 | REV C
SCALE NONE | SPEC CODE

Figure 8-6. Composite layout of TSA-2 extracted from Drawing Number 0980705-220.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
B	REPLACES REV A WITH CHANGE. SEE B DCN	10/23/90	GRB



CELL INFORMATION FOR TSA PAD-R

Cell	Size (meters)	Date Opened	Date Closed	208-1 Drums	113-1 Drums	314-1 Drums	3.43 m3 Cvsz FRP	3.17 m3 Fiberglass	3.17 m3 Sand	3.50 m3 Bins	36.25 m3 Cargo Cont	TOTAL VOLUME (cubic meters)
1*	42 X 46	08/75	11/80	17,113	0	0	0	0	0	352	209	3822
2	22 X 46	11/80	07/82	0	0	0	29	945	0	12	0	3038
3	64 X 46	07/82		0	0	0	0	945	827	86	0	5918
Totals				17,113	0	0	29	1890	827	450	209	12,778

* The volume of the 209 cargo containers is not included in the total volume due to the 14,839 drums that were placed inside of them due to the retrieval projects. Also, 2,274 drums were placed in 280 bins. The volume of these bins was also excluded, but the volume of those drums was included in the count.

NOTES:

1. METAL CARGO CONTAINERS AND STORAGE BINS CONTAIN RETRIEVED TRU WASTE.

RELEASED FOR USE
Drawing Status Verified with Engineering Document Control at (208) 526-1202 or 526-1206
Date 6-26-95 By Barry Scott

QTY. REQD	QUAL. LEVEL	PART OR IDENTIFYING NO.	DESCRIPTION/MATERIAL/SPECIFICATION	ITEM/FIND

PARTS LIST

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED
SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: .X = ± .1, .XX = ± .03, .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

NEXT ASSY/REF DWG
P.M. JHN 11-16-84
DES. MGR. RWP 5-17-83
OPER.
SAFETY
QUAL.
DESIGN R W PASSMORE DATE 5-17-83
CHECKED R W PASSMORE DATE 5-17-83
DRAWN A.L. CARLSON DATE 8-13-90
RELEASE DMR DATE 5-17-83

EG&G Idaho, Inc.

INEL
TRANSURANIC STORAGE
AREA RETRIEVAL
PAD

SIZE D | INDEX CODE NUMBER: AREA 098, TYPE 0112, CL 38, ORIG 220 | DRAWING NO. 418322 | REV B
SCALE NONE | SPEC

Figure 8-7. Composite layout of TSA-R extracted from Drawing Number 1570-RWMC-112-1 and subsequently updated.

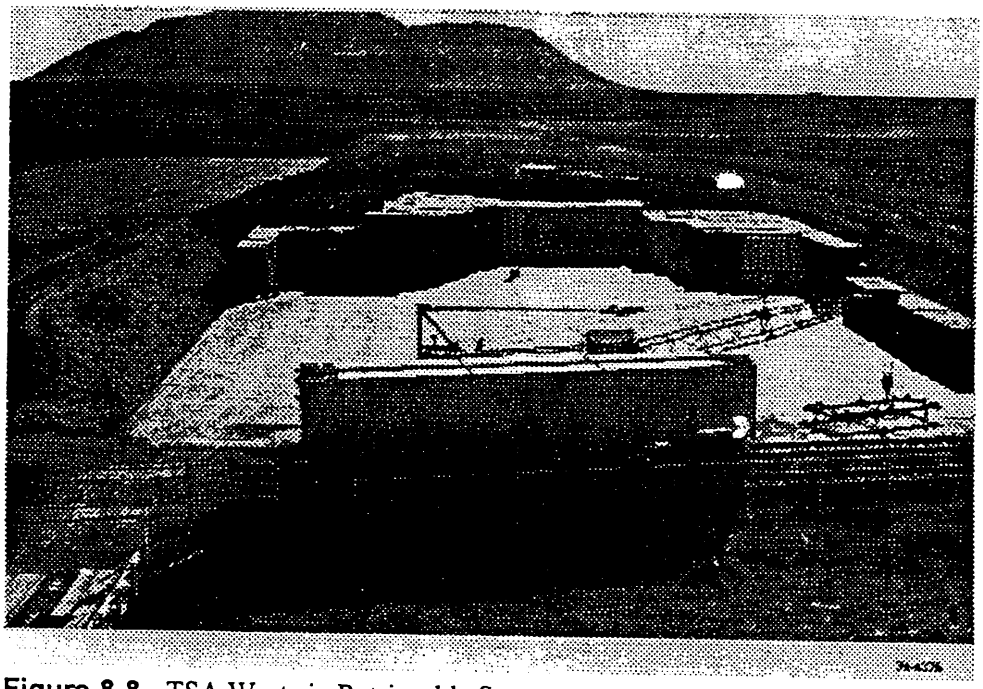


Figure 8-8. TSA Waste in Retrievable Storage.

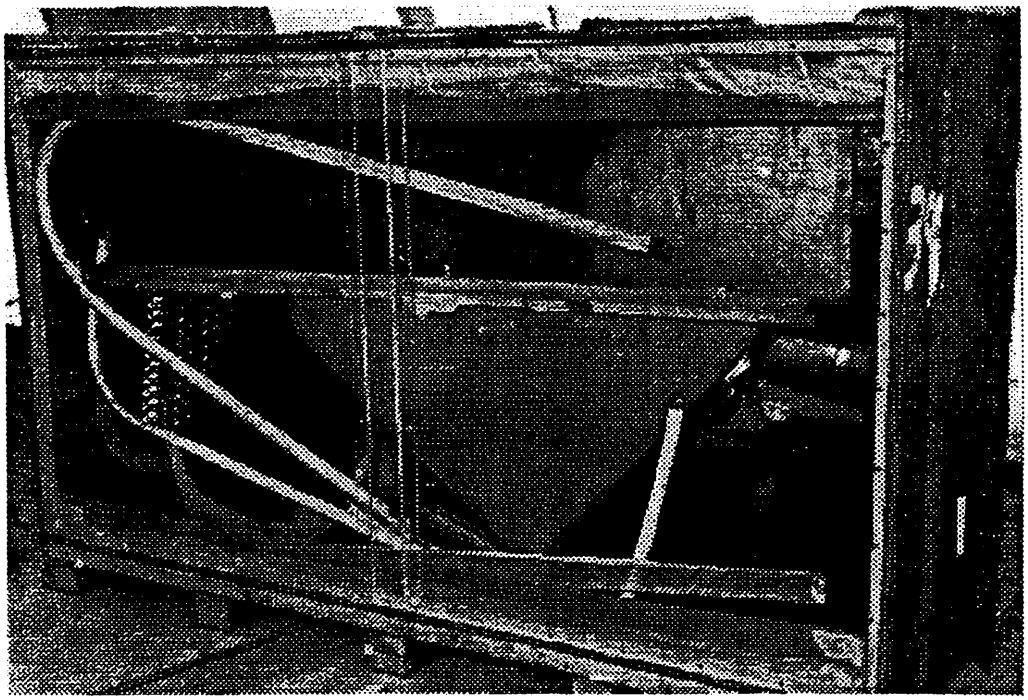


Figure 8-9. Typical TSA waste in boxes.

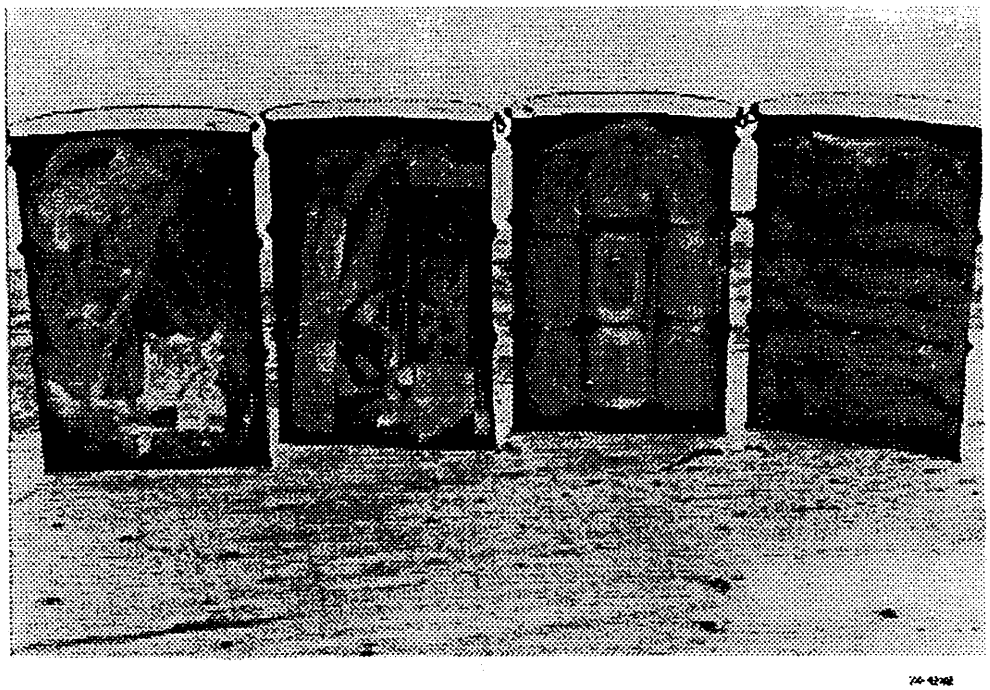


Figure 8-10. Typical TSA waste in drums.

Table 8-1 presents a description of typical waste containers expected to be retrieved from storage. Table 8-2 identifies the estimated volume of waste in each pad and cell. The total (51,310 m^3) represents approximately 79 percent of the total estimated TSA waste volume of 65,000 m3. The balance (21 percent) of the total represents waste which has been in retrievable storage such as in the air support building, but which is currently being moved to the storage modules. Table 8-3 identifies estimated waste volume by content code and Pad-by-Cell location. This identification of waste volume by content code can be used to correlate waste location to waste characterization information contained in this report and Appendices A and B detailed data reports. Table 8-4 identifies waste container type, number, and volume by estimated cell location. Table 8-5 identifies waste disposal year by generator and container type.

Table 8-1. Descriptions of waste containers expected to be retrieved from storage.[a]

Container[b]	Description[c]	External[c] volume (ft^3)	Empty[c] weight (lbs)	Estimated distribution (volume %)
Drum:				
Metal (17C)	30-gallon (19.6 in. OD × 29.5 in.)	4.1	42	<1
Metal (17H)	55-gallon (23.4 in. OD × 34.75 in.)	7.5	50	36
Metal (17C)	55-gallon (23.4 in. OD × 34.75 in.)	7.5	67	1
Metal	83-gallon (27.5 in. OD × 38.2 in.)	11.2	101	1
Metal (6M)	100-gallon	13.4	128	<1
Metal	110-gallon[d] (23.4 in. OD × 69.5 in.)	15.0	100	<1
Box:				
Wood	35 in. × 62 in. × 112 in.	140.2	700	<1
Wood	62 in. × 63 in. × 104 in.	235.1	900	<1
Wood	48 in. × 52 in. × 84 in.	120.4	590	<1
Wood	105 in. × 110 in. × 61 in.	407.7	1300	<1
FRP[e]	4 ft × 2 ft × 7 ft	56.0	430	<1
FRP	4 ft × 4 ft × 7 ft	112.0	620	55
FRP	48 in. × 54 in. × 84 in.	126.0	670	<1
Metal	44 in. × 55 in. × 79 in.	110.6	470	<1
Metal	84 in. × 48 in. × 48 in.	112.0	480	<1
Metal	74.4 in. × 50.5 in. × 38.5 in.	83.3	400	<1
Metal	68 in. × 54 in. × 38.5 in.	82.1	390	<1
Metal	88 in. × 54 in. × 54 in.	147.8	540	3
Metal	50.4 in. × 58.4 in. × 72.4 in.	123.5	676	<1
Metal	112 in. × 68 in. × 77 in.	339.3	990	<1

Table 8-1. (continued).

Container[b]	Description[c]	External[c] volume (ft^3)	Empty[c] weight (lbs)	Estimated distribution (volume %)
Bin:				
Metal	50.4 in. × 58.4 in. × 72.4 in.	123.5	676	3
Metal[f]	50.4 in. × 58.4 in. × 76.5 in.	123.5	676	<1
Remote-handled canisters:				
Metal	26 in. OD × 121-in. long	37.3	1700	<1
Insert: Metal	23.4 in. OD x 34.75 in. long	7.5	50	<1

a. Other containers similar to listed containers may also be retrieved. The estimated distribution of non-listed containers is less than one volume percent (<1%). EDF PSPI-015546-03, January 5, 1994.

b. The condition of the stored boxes and bins is unknown. Drums, boxes or bins may require overpacking during retrieval. For the purposes of this SOW, it is estimated that approximately 10% of the drums may require overpacking. The 55-gallon drums may be overpacked in 83-gallon drums; 55-gallon or 83-gallon drums may be overpacked into boxes. Boxes or bins may be overpacked into larger boxes or bins. Oversize or special-case containers may be required for transport of a fraction of the retrieved waste containers.

c. The container dimensions, volume and weight listed are approximate. The INEL cannot guarantee the values listed.

d. Two 55-gallon drums connected to form a double-length cylinder.

e. FRP is Fiberglass Reinforced Polyester.

f. Same as the 50.4 in. × 58.4 in. × 72.4 in. with the addition of 4-in. lifting attachments on top of bin.

Note: The maximum weight of a 55-gal drum is expected to be 800 lbs. The maximum weight of other drums is expected to be 2000 lbs. For a box or bin, the maximum weight is expected to be 14,000 lbs.

Table 8-2. Transuranic Storage Area (TSA) estimated waste inventory.[a]

Current Storage Location		Volume (m3)
Pad 1 CELL 1		2.896E+03
Pad 1 CELL 2		4.560E+03
Pad 1 CELL 3		4.002E+03
Pad 1 CELL 4		3.587E+03
Pad 1 CELL 5		3.478E+03
Pad 1 CELL 6		1.742E+03
Pad 1 CELL 7		4.956E+03
Pad 1 CELL 8		2.808E+03
	Subtotal	2.803E+04
PAD 2, CELL 1		4.235E+03
PAD 2, CELL 1A		1.937E+03
PAD 2, CELL 2		3.245E+03
PAD 2, CELL 3 (ASB-II)		6.680E+02
	Subtotal	1.009E+4
Pad R CELL 1		3.927E+03
Pad R CELL 2		3.243E+03
Pad R CELL 3		5.929E+03
	Subtotal	1.310E+04
ILTSF CELL		8.559E+01
	Subtotal	8.559E+01
Total for Pads 1,2,R, and ILTSF		5.131E+04 m3

a. EDF RWMC-837, August 24, 1995.

Table 8-3. TSA waste volume by storage location and content code.[a]

Storage Location	Content Code	Volume (m3)
PAD 1 CELL 1	0	6.246E-01
	1	1.624E+02
	2	2.109E+02
	3	1.447E+02
	4	4.018E+01
	5	1.041E+00
	90	2.228E+01
	95	4.372E+00
	241	1.832E+01
	300	1.895E+01
	310	2.915E+00
	311	3.797E+00
	320	4.580E+00
	330	2.752E+02
	335	1.041E+00
	336	4.632E+02
	337	1.041E+02
	360	3.644E+01
	370	1.249E+00
	371	8.072E+01
	391	2.082E-01
	392	4.164E-01
	420	1.249E+00
	422	4.164E-01
	430	5.205E+00
	431	1.249E+00
	440	5.272E+01
	441	8.328E+00
	442	2.082E-01
	460	1.249E+00
	463	8.744E+00
	464	5.621E+00
	480	8.378E+02
	481	8.328E-01
	490	1.668E+02
	900	1.416E+01
	950	3.001E+01
	960	8.233E+01
	970	4.524E+01
	990	3.435E+01
	995	2.290E+00
	Subtotal	2.896E+03

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
PAD 1 CELL 2	0	7.703E+00
	1	1.672E+02
	2	4.891E+02
	3	1.332E+02
	4	3.123E+01
	5	1.041E+00
	90	1.853E+01
	241	1.749E+01
	290	1.041E+00
	300	3.748E+00
	320	3.581E+01
	330	9.238E+02
	335	5.830E+00
	336	2.053E+02
	337	6.704E+01
	360	1.166E+01
	370	2.040E+01
	371	1.693E+02
	422	1.041E+00
	440	5.247E+01
	463	1.874E+00
	464	1.041E+00
	480	1.320E+03
	481	1.874E+00
	490	1.562E+02
	900	8.453E+01
	950	5.978E+02
	960	3.414E+01
	Subtotal	4.560E+03
PAD1 CELL 3	0	6.246E-01
	1	2.028E+02
	2	2.444E+02
	3	1.705E+02
	4	5.358E+01
	5	1.041E+00
	90	2.521E+01
	95	5.001E+00
	241	1.978E+01
	300	2.231E+01
	310	3.123E+00
	311	3.797E+00

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	320	4.997E+00
	330	3.129E+02
	335	1.041E+00
	336	5.161E+02
	337	1.190E+02
	360	4.072E+01
	370	1.249E+00
	371	9.458E+01
	391	2.082E-01
	392	4.164E-01
	420	1.457E+00
	422	4.164E-01
	430	6.893E+00
	431	1.249E+00
	440	6.600E+01
	441	8.953E+00
	442	2.082E-01
	460	1.885E+00
	463	1.435E+01
	464	6.674E+00
	480	1.467E+03
	481	8.328E-01
	490	3.014E+02
	900	1.625E+01
	950	4.904E+01
	960	9.452E+01
	970	7.696E+01
	990	3.843E+01
	995	3.028E+00
	Subtotal	3.999E+03
PAD 1 CELL 4	1	1.360E+02
	2	5.673E+02
	3	1.699E+02
	4	6.778E+01
	5	1.041E+00
	241	1.666E+00
	300	3.003E+01
	301	1.457E+00
	302	4.164E-01
	320	1.457E+00
	330	1.480E+02

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	335	1.457E+00
	336	5.254E+02
	337	1.004E+02
	338	6.246E-01
	360	1.587E+01
	361	4.164E-01
	370	8.120E+00
	371	5.043E+01
	374	2.082E+00
	392	1.457E+00
	420	4.164E-01
	430	6.246E-01
	432	3.539E+00
	440	2.936E+01
	441	4.164E-01
	463	2.082E+00
	464	5.205E+00
	480	9.236E+02
	490	5.086E+01
	900	3.730E+01
	950	1.702E+02
	960	5.080E+02
	970	1.092E+01
	990	4.580E+00
	995	8.536E+00
	Subtotal	3.587E+03
PAD 1 CELL 5	1	1.387E+02
	2	8.203E+01
	3	5.809E+01
	4	1.457E+01
	241	4.164E-01
	300	1.103E+01
	302	7.801E+00
	320	2.915E+00
	330	1.147E+02
	335	3.331E+00
	336	1.843E+02
	337	5.365E+01
	338	4.738E+01
	339	2.082E+00
	360	6.246E-01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	371	6.377E+01
	374	6.978E+01
	375	4.164E-01
	432	2.915E+00
	440	1.208E+01
	441	1.811E+01
	480	1.660E+03
	481	1.874E+00
	490	3.402E+02
	900	1.780E+01
	950	4.838E+02
	960	9.785E+00
	970	7.613E+01
	980	4.164E-01
	Subtotal	3.478E+03
PAD 1 CELL 6	1	7.641E+01
	2	7.141E+01
	3	4.435E+01
	4	1.353E+01
	10	2.404E+01
	20	3.539E+00
	30	2.082E-01
	300	2.582E+01
	301	2.082E-01
	302	6.246E-01
	320	1.874E+00
	330	7.599E+01
	335	1.874E+00
	336	1.534E+02
	337	4.653E+01
	338	9.886E+01
	339	8.328E-01
	371	3.625E+01
	374	9.479E+01
	432	1.874E+00
	440	6.454E+00
	441	6.246E+00
	480	6.417E+02
	490	7.379E+01
	900	1.374E+01
	950	6.682E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	960	4.078E+00
	970	3.806E+01
	990	7.308E+01
	995	4.601E+01
	Subtotal	1.742E+03
PAD 1 CELL 7	1	2.026E+02
	2	2.996E+02
	3	1.330E+02
	4	2.832E+01
	5	6.246E-01
	10	5.892E+01
	20	4.206E+01
	30	7.287E+00
	40	2.082E-01
	100	1.631E+02
	292	1.249E+00
	300	3.248E+01
	301	2.082E-01
	302	2.262E+01
	320	5.830E+00
	330	4.745E+02
	335	1.145E+01
	336	2.851E+02
	337	6.620E+01
	338	1.598E+02
	339	6.454E+01
	371	7.079E+00
	372	6.246E-01
	374	1.356E+02
	375	2.082E+00
	411	2.082E-01
	422	6.246E-01
	432	8.328E+00
	440	1.686E+01
	441	1.395E+01
	442	1.457E+00
	480	2.200E+03
	481	6.537E+01
	490	3.999E+02
	900	4.164E+00
	950	1.586E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	960	3.398E-01
	970	6.344E+00
	995	1.791E+01
	Subtotal	4.956E+03
PAD 1 CELL 8	1	1.493E+02
	2	1.443E+02
	3	9.098E+01
	4	1.895E+01
	5	3.172E+00
	10	5.351E+01
	20	5.934E+01
	30	4.164E-01
	40	2.082E-01
	100	7.476E+01
	101	4.417E+01
	292	7.287E+00
	300	4.580E+01
	301	4.789E+00
	302	6.344E+00
	310	2.082E-01
	320	9.577E+00
	330	3.921E+02
	335	2.498E+00
	336	2.394E+01
	337	1.811E+01
	338	4.997E+00
	339	2.915E+01
	371	3.331E+00
	372	4.164E-01
	374	1.759E+01
	422	1.041E+00
	432	3.956E+00
	440	2.832E+01
	441	1.272E+02
	442	2.915E+00
	480	6.114E+02
	481	1.728E+01
	490	2.635E+02
	824	1.269E+01
	834	4.351E+01
	835	4.393E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	836	2.940E+02
	838	2.082E-01
	842	1.142E+02
	847	1.457E+01
	848	2.290E+01
	900	6.246E-01
	950	8.328E-01
	990	2.082E-01
	Subtotal	2.808E+03
PAD 2 CELL1	1	2.221E+02
	2	2.142E+02
	3	1.453E+02
	4	4.851E+01
	10	5.705E+01
	20	5.996E+01
	30	1.249E+00
	40	3.123E+00
	100	2.650E+02
	150	2.290E+00
	152	4.164E-01
	154	2.082E-01
	155	4.005E+00
	292	2.332E+01
	300	2.457E+01
	301	4.164E-01
	302	1.903E+01
	311	6.246E-01
	320	7.079E+00
	330	7.907E+02
	336	2.383E+01
	337	3.019E+01
	338	8.120E+00
	339	1.520E+01
	370	4.164E-01
	371	7.079E+00
	374	5.030E+01
	376	9.545E+01
	391	1.249E+00
	393	3.331E+00
	410	2.290E+00
	421	1.624E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	422	6.246E-01
	432	1.562E+01
	440	2.686E+01
	441	1.276E+02
	442	2.082E-01
	480	1.173E+03
	481	2.712E+01
	490	1.713E+02
	801	6.454E+00
	802	4.164E+00
	803	9.994E+00
	804	9.785E+00
	805	2.082E+00
	810	8.328E-01
	811	8.328E-01
	813	6.246E-01
	824	2.538E+01
	825	3.123E+00
	834	3.165E+01
	835	1.108E+02
	836	1.753E+02
	847	3.727E+01
	970	6.344E+00
	976	6.490E+01
	978	3.489E+01
	995	2.538E+01
	Subtotal	4.235E+03
PAD 2 CELL 1A	100	3.466E+02
	101	8.495E+01
	201	9.175E+01
	202	1.699E+01
	203	1.359E+01
	330	5.297E+02
	480	3.553E+02
	490	2.094E+02
	824	2.887E+02
	Subtotal	1.937E+03
PAD 2 CELL 2	1	2.413E+02
	2	1.555E+02
	3	2.299E+02

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	4	3.435E+01
	10	5.413E+00
	20	4.164E-01
	30	2.082E-01
	40	1.832E+01
	150	1.041E+00
	152	8.328E-01
	153	2.082E-01
	154	2.082E-01
	155	2.082E-01
	201	8.744E+00
	202	6.246E-01
	203	5.413E+00
	204	1.041E+00
	292	1.499E+01
	300	2.519E+01
	302	6.246E-01
	320	2.020E+01
	330	8.689E+02
	336	1.374E+01
	337	3.081E+01
	339	1.228E+01
	370	4.164E-01
	371	7.912E+00
	374	6.246E-01
	375	6.246E-01
	376	9.894E+01
	391	2.290E+00
	393	2.082E-01
	410	2.290E+00
	420	2.082E-01
	421	4.580E+00
	422	2.082E-01
	432	7.287E+00
	440	3.290E+01
	441	3.227E+01
	442	9.952E+01
	480	4.179E+02
	481	5.122E+01
	490	2.157E+02
	802	1.437E+01
	803	1.686E+01

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	804	2.269E+01
	805	4.372E+00
	810	1.041E+00
	814	4.164E-01
	824	2.538E+01
	825	1.332E+01
	834	1.037E+02
	835	9.785E+01
	836	1.936E+02
	847	5.726E+01
	848	3.123E+00
	970	2.538E+01
	Subtotal	3.245E+03
PAD 2 CELL 3 (ASB-II)	1	7.849E+01
	2	2.727E+01
	3	4.247E+01
	4	1.437E+01
	7	3.123E+00
	10	2.707E+00
	20	4.164E-01
	40	3.331E+00
	102	6.871E+00
	105	2.082E-01
	150	6.246E-01
	153	2.082E-01
	155	4.164E-01
	241	2.082E-01
	292	1.666E+00
	300	1.166E+01
	301	4.164E-01
	302	2.082E-01
	320	3.956E+00
	330	9.052E+01
	335	1.041E+00
	336	6.996E+01
	337	3.352E+01
	338	2.498E+00
	339	6.246E-01
	371	5.621E+00
	374	7.703E+00
	376	3.748E+00

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	393	2.082E-01
	414	2.082E-01
	421	2.082E-01
	432	3.123E+00
	440	7.495E+00
	441	4.164E-01
	442	1.187E+01
	464	2.082E-01
	480	1.668E+02
	481	1.666E+00
	490	2.082E-01
	803	4.164E-01
	804	2.082E-01
	825	8.328E-01
	834	6.246E-01
	835	1.083E+01
	836	2.915E+00
	847	4.789E+00
	848	4.164E-01
	900	3.748E+00
	950	3.000E+01
	960	6.246E+00
	970	6.246E-01
	Subtotal	6.680E+02
PAD R CELL 1	0	3.851E+03
	330	6.661E+01
	336	3.172E+00
	376	3.172E+00
	490	3.172E+00
	Subtotal	3.927E+03
PAD R CELL 2	100	2.039E+01
	101	3.398E+00
	102	1.019E+01
	156	2.538E+01
	330	1.145E+03
	376	3.172E+00
	480	6.439E+02
	490	3.648E+02
	824	9.949E+02
	825	3.172E+00

Table 8-3. (continued).

Storage Location	Content Code	Volume (m3)
	826	2.908E+01
	Subtotal	3.243E+03
PAD R CELL 3	3	1.903E+01
	4	3.172E+00
	100	2.039E+02
	101	5.777E+01
	102	2.718E+01
	104	3.398E+00
	156	3.964E+00
	302	3.172E+00
	330	4.276E+03
	336	3.172E+00
	338	3.172E+00
	374	6.344E+00
	440	3.172E+00
	480	5.392E+02
	481	6.661E+01
	490	4.504E+02
	824	2.126E+02
	826	3.409E+01
	950	6.344E+00
	970	6.344E+00
	Subtotal	5.929E+03
ILTSF RH-TRU WASTE	30	3.964E-01
	104	4.657E+01
	107	2.124E+01
	150	6.274E+00
	151	2.272E-01
	152	1.982E-01
	153	4.455E+00
	158	5.607E+00
	160	1.982E-01
	161	4.164E-01
	Subtotal	8.559E+01

a. EDF RWMC-837, August 24, 1995.

Table 8-4. Cell location by container type, number, and volume.

Storage Location	Container Type[a]	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Bin Qty	Bin Vol (m3)	Total Vol (m3)
Pad 1 Cell 1	55 Gallon (17 H)	9,147	1,904.0					1,904.0
	BOX			312	989.7			989.7
	FRP (MRC)			14	2.4			2.4
	Subtotal	9,147	1,904.0	326	992.0			2,896.0
Pad 1 Cell 2	55 Gallon (17 H)	12,732	2,651.0					2,651.0
	BOX			602	1,910.0			1,910.0
	Subtotal	12,732	2,650.8	602	1,910.0			4,560.0
Pad 1 Cell 3	55 Gallon (17 H)	8,573	1,785.0					1,785.0
	83 Gallon	1,349	423.9					423.9
	BOX			563	1,786.0			1,786.0
	FRP (MRC)			26	4.4			4.4
	Subtotal	9,922	2,209.0	589	1,790.0			3,999.0
Pad 1 Cell 4	55 Gallon (17 H)	8,454	1,760.0					1,760.0
	83 Gallon	908	285.3					285.3
	BOX			486	1,542.0			1,542.0
	Subtotal	9,362	2,045.0	486	1,542.0			3,587.0
Pad 1 Cell 5	55 Gallon (17 H)	4,061	845.5					845.5
	BOX			830	2,633.0			2,633.0
	Subtotal	4,061	845.5	830	2,633.0			3,478.0
Pad 1 Cell 6	55 Gallon (17 H)	3,609	751.4					751.4
	83 Gallon	52	16.3					16.3
	BOX			306	970.6			970.6
	FRP (MRC)			12	4.1			4.1
	Subtotal	3,661	767.7	318	974.7			1,742.0
Pad 1 Cell 7	55 Gallon (17 H)	8,195	1,706.0					1,706.0
	BOX			973	3,086.0			3,086.0
	FRP (MRC)			1	0.3			0.3
	M-III, M-IV BIN					48	163.1	163.1
	Subtotal	8,195	1,706.0	974	3,087.0	48	163.1	4,956.0
Pad 1 Cell 8	55 Gallon (17 H)	6,443	1,341.0					1,341.0
	BOX			425	1,348.0			1,348.0
	M-III, M-IV					35	118.9	118.9

Table 8-4. (continued).

Storage Location	Container Type[a]	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Bin Qty	Bin Vol (m3)	Total Vol (m3)
	Subtotal	6,443	1,341.0	425	1,348.0	35	118.9	2,808.0
Pad 2 Cell 1	55 Gallon (17 H)	8,069	1,680.0					1,680.0
	BOX			722	2,290.0			2,290.0
	M-III, M-IV					78	265.0	265.0
	Subtotal	8,069	1,680.0	722	2,290.0	78	265.0	4,235.0
Pad 2 Cell 1A	BOX			436	1,383.0			1,383.0
	M-III, M-IV					163	553.9	553.9
	Subtotal			436	1,383.0	163	553.9	1,937.0
Pad 2 Cell 2	55 Gallon (17 H)	8,186	1,704.0					1,704.0
	BOX			355	1,126.0			1,126.0
	Mexican AM			137	372.5			372.5
	Standard Waste Box			18	42.1			42.1
	Subtotal	8,186	1,704.3	510	1,541.0			3,245.0
Pad 2 Cell 3 (ASB-II)	55 Gallon (17 H)	2,153	477.6					477.6
	BOX			60	190.3			190.3
	Subtotal	2,153	477.6	60	190.3			668.0
Pad R Cell 1	55 Gallon (17 H)	14,429	3,004.0					3,004.0
	83 Gallon Drum	2,511	789.0					789.0
	BOX			24	76.1			76.1
	M-III, M-IV BIN					17	57.8	57.8
	Subtotal	16,940	3,793.0	24	76.1	17	57.8	3,927.0
Pad R Cell 2	BOX			823	3,196.0			3,196.0
	M-III, M-IV BIN					10	34.0	34.0
	Plywood Box (RFP)			4	13.7			13.7
	Subtotal			827	3,210.0	10	34.0	3,243.0
Pad R Cell 3	BOX			871	2,763.0			2,763.0
	M-III, M-IV BIN					86	292.2	292.2
	Plywood Box (RFP)			74	250.7			250.7
	Sand Type I			827	2,623.0			2,6[illegible]
	Subtotal			1,772	5,637.0	86	292.2	5,[illegible]

Table 8-4. (continued).

Storage Location	Container Type[a]	Drum Qty	Drum Vol (m3)	Box Qty	Box Vol (m3)	Bin Qty	Bin Vol (m3)	Total Vol (m3)
ILTSF RH-TRU	30 Gallon (17C)	616	70.0					70.0
	55 Gallon (17 H)	15	3.1					3.1
	83 Gallon	4	1.1					1.1
	UNKNOWN			38	11.4			11.4
	Subtotal	635	74.2	38	11.4			85.6
TSA	Grand Total	99,506	21,200.0	8,939	28,610.0	437	1,485.0	51,300.0

a.

Container Type	Container Dimensions
30 Gallon (17C)	"19-19/32"" OD x 29-1/2"""
55 Gallon (17 H)	"23-7/16"" OD x 34-9/16"""
83 Gallon	"27-1/2"" OD x 38-1/8"""
83 Gallon Drum	"27-1/2"" OD x 38-1/8"""
BOX	"84"" X 48"" X 48"""
BOX	"108"" x 72.5"" x 60.625"" (est)"
FRP (MRC)	"24"" x 24"" x 18"""
FRP (MRC)	"36"" x 24"" x 24"""
"M-III, M-IV"	50-3/8 x 58-3/8 x 72-3/8
"M-III, M-IV BIN"	50-3/8 x 58-3/8 x 72-3/8
Mexican AM (RWMC)	"72"" x 72"" x 48"""
Plywood Box (RFP)	"84"" X 52"" X 48"""
Plywood Box (RFP)	"112"" X 62"" X 35"" (est)"
Plywood Box (RFP)	"84"" X 48"" X 48"" (est)"
Plywood Box (RFP)	"112"" X 62"" X 35"" (est)"
Sand Type I	"84"" X 48"" X 48"""
Standard Waste Box	"72"" x 54-1/4"" x 37"""

Table 8-5. TSA disposal year by generator and container type.

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed[a]
70	CFA	INEL	BLM
	RFO	RFP	BLM, BXW
71	ANL	ANL-W	BLM
	ARA	INEL	BLM, BXW
	CPP	INEL	BLM
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
72	ARA	INEL	BLM
	CPP	INEL	BLM, unknown
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM, unknown
73	ANL	ANL-W	BLM, unknown
	BET	Bettis	BLM
	CPP	INEL	BLM
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM, unknown
74	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	CPP	INEL	BLM
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM
	WMC	RFP	BLM
75	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM, unknown
	TRA	INEL	BLM, BXW, unknown
	WMC	RFP	BLM
76	ALE	ANL-E	BIN
	ANL	ANL-W	BLM, unknown
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed[b]
	RFO	RFP	BLM, BXW
	TRA	INEL	unknown
77	ALE	ANL-E	BIN
	ANL	ANL-W	BLM, BXC
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	NRF	INEL	unknown
	RFO	RFP	BLM, BXW
	TRA	INEL	unknown
	WMC	RFP	BIN, BLM, unknown
78	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BLM
	BET	Bettis	BLM
	MRC	Mound	BLM
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
	WMC	RFP	BIN, BLM
79	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM
	TRA	INEL	BLM
	WMC	RFP	BLM
80	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN, BXW
	BET	Bettis	BLM
	CPP	INEL	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
81	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BCL	Battelle Columbus	BIN, BLM
	BET	Bettis	BLM
	CPP	INEL	BXW

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed[b]
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
82	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	CFA	INEL	BLM
	CPP	INEL	BXW
	MRC	Mound	BLM, BXW
	NRF	INEL	BLM
	RFO	RFP	BLM, BXW
	TAN	INEL	BLM
	TRA	INEL	BLM
83	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	MRC	Mound	BLM, BXW
	RFO	RFP	BLM, BXW
84	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	CPP	INEL	BIN, BLM
	MRC	Mound	BXW
	RFO	RFP	BLM, BXW
	TRA	INEL	BLM
85	ALE	ANL-E	BIN
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	MRC	Mound	BXW
	RFO	RFP	BLM, BXM, BXW
	TRA	INEL	BLM
86	ALE	ANL-E	BIN, BLM
	ANL	ANL-W	BLM
	BEN	Bendix	BLM
	RFO	RFP	BLM, BXM
	TRA	INEL	BLM
87	ALE	ANL-E	BLM
	ANL	ANL-W	BLM
	BET	Bettis	BLM
	LOF	INEL	BLM
	MRC	Mound	BLM, BXM

Table 8-5. (continued).

Disposal Year	Generator Historical Identifier Code	Generator Current Identifier Code	Estimated Container Type Disposed[b]
	RFO	RFP	BLM, BXM
	TRA	INEL	BLM
	WMC	RFP	BLM
88	ANL	ANL-W	BLM
	MRC	Mound	BLM, BXM
	RFO	RFP	BLM, BXM
89	ANL	ANL-W	BLM, RD5, RDL
	RFO	RFP	BLM, BXM
90	ANL	ANL-W	BLM, RDL
	D+D	INEL	RD5
	NRF	INEL	RD5
91	ANL	ANL-W	RDL
	RFO	RFP	BIN
92	ANL	ANL-W	RDL

a. WM-PD-90-003, Rev. 1, August 31, 1993.

b. BXC- cardboard box, BLM - metal barrel, BXW - wooden box, BIN - bin (other than WERF only bins), RD5 - metal barrel, 55 gal., without liner, RDL - metal barrel, 55 gal. With liner, 0 other.

9. REFERENCES

1-1. M. L. Apel, et al., *Radiological, Physical, and Chemical Characterization of Low-Level Alpha Contaminated Wastes Stored at the Idaho National Engineering Laboratory*, EGG-RWMC-11189, Rev 0, March 1994.

1-2. M. L. Apel, et al., *Radiological, Physical, and Chemical Characterization of Transuranic Wastes Stored at the Idaho National Engineering Laboratory*, EGG-RWMC-11190, Rev 0, March 1994.

1-3. *Statement of Work for a Feasibility Study on Treatment Services for Alpha-Contaminated Mixed Low-Level Wastes*, December 15, 1993, as included in RFP DE-RP07-94ID13278, *Private Sector Waste Treatment Facility Feasibility Study*, dated December 20, 1993.

1-4. Resource Conservation and Recovery Act of 1976, as amended, (Public Law 94-580).

1-5. Toxic Substance Control Act of 1976, as amended, (Public Law 94-469).

1-6. Federal Facility Compliance Act of 1992, as amended, (Public Law 102-386).

1-7. U.S. Department of Energy, *Land Disposal Restriction Case-by-Case Extension Application for Radioactive Mixed Wastes*, as submitted to the U.S. Environmental Protection Agency, October, 1991.

1-8. U.S. Department of Energy Order 5820.2A, "Radioactive Waste Management," Office of Defense Waste and Transportation Management, U.S. Department of Energy, Washington, D.C., September 26, 1988

1-9. Code of Federal Regulations, Title 40, "Protection of the Environment," Office of the Federal Register National Archives and Records Administration, July 1, 1991.

1-10. Code of Federal Regulations, Title 10, "Energy," Office of the Federal Register National Archives and Records Administration, July 1, 1993.

1-11. Code of Federal Regulations, Title 49, "Transportation," Office of the Federal Register National Archives and Records Administration, October 1, 1992.

3-1. Radioactive Waste Technical Support Program, *Department of Energy Waste Treatability Group Guidance*, DOE/LLW-217, Rev. 0, January 1995.

3-2. J. H. Lee, G. P. Martins, J. R. Weidner, *Characterization Studies on: a) Contaminated Batch of Rocky Flats Soil, b) Uncontaminated Batch of INEL Soil*, EG&G-WTD-9749, June 1991.

4-1. U.S. Department of Energy Order 5820.2A, *Radioactive Waste Management*, Office of Defense Waste and Transportation Management, U.S. Department of Energy, Washington, D.C., September 26, 1988.

4-2. E. Browne and R. B. Firestone, *Table of Radioactive Isotopes*, John Wiley & Sons, 1986.

4-3. I. R. Terry, "A Practical Algorithm to Derive the (α, n) Source Term in a Composite Mixture Containing Actinides," *Nuclear Science Engineering 113*, p. 282, 1993.

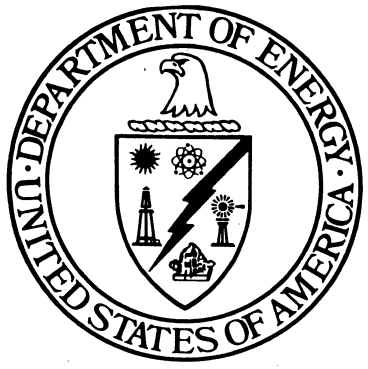
4-4. M. E. Anderson and J. F. Lemming, *Selected Measurement Data for Plutonium and Uranium*, Mound Laboratory report MLM-3009/ISPO-157, November 1982.

4-5. C. L. Atwood and M. J. Schlafman, *Empirical Distributions of Radionuclides from RWMIS Data*, EG&G Idaho, Inc., EGG-RAAM-10741, April 1993.

4-6. D. H. Card, *History of Buried Transuranic Waste at INEL*, EG&G Idaho, Inc., WMP 77-3, March 1977.

4-7. EPRI, *Updated Scaling Factors in Low-Level Radwaste*, EPRI NP-5077, Impell Corporation, March 1987.

4-8. LITCO (Lockheed Idaho Technologies Company), *A Comprehensive Inventory of Radiological and Nonradiological Contaminants in Waste Buried in the Subsurface Disposal Area of the INEL RWMC During the Years 1984-2003*, INEL-95/0135, revision 1, 3 volumes, August, 1995.



Waste Description Information for Transuranic-Contaminated Wastes Stored at the Idaho National Engineering Laboratory

Appendix A- Detailed Information for Mixed and Non-Mixed Alpha Low-Level Waste

September 1995

Idaho National Engineering Laboratory

Appendix Summary

This appendix presents detailed information on the mixed and non-mixed transuranic contaminated low level wastes at the Idaho National Engineering Laboratory. The information is provided in a series of tables. Table 1 provides waste identification and description information. Table 2 provides waste storage information. Table 3 provides waste matrix information. Table 4 provides radionuclide contaminant information and Table 5 provides hazardous contaminant information. Additional information on the table format and field descriptions is provided in section 6 of the summary document.

This appendix also includes alpha activity concentration information and radionuclide isotopic composition information for the less than 100 nCi/g category (alpha low level) for the following waste streams presently classified as transuranic: ID-AEO-105T, content code 105; ID-AEO-107T, content code 107; ID-ANL-162T, content code 162; ID-BTO-040T, content code 40; ID-MDO-827T, content code 827; ID-RFO-312T, content code 312; ID-BTO-012TN, content code 12; and ID-BTO-081TN, content code 81.

The waste stream identifier codes previously used have recently been updated. Pages iii and iv provide a listing of waste stream codes included in this appendix as well as a cross reference to the previous waste stream codes.

Listing of waste streams included in Appendix A[a]

INEL key code	Waste stream code	Content Code	Previous waste stream code
Mixed waste			
155	ID-AEO-100	100	ID-EGG-134
156	ID-AEO-101	101	ID-EGG-134
297	ID-AEO-102	102	ID-EGG-288
206	ID-AEO-104	104	ID-EGG-144
308	ID-AEO-105T	105	ID-EGG-288T
310	ID-AEO-107T	107	ID-EGG-288T
300	ID-ANL-161	161	ID-EGG-288
314	ID-ANL-162T	162	ID-EGG-288T
158	ID-BCO-201	201	ID-EGG-134
301	ID-BCO-202	202	ID-EGG-288
302	ID-BCO-203	203	ID-EGG-288
303	ID-BCO-204	204	ID-EGG-288
72	ID-BTO-010	10	ID-EGG-114
142	ID-BTO-020	20	ID-EGG-132
34	ID-BTO-030	30	ID-EGG-102
213	ID-BTO-040T	40	ID-EGG-144T
299	ID-CPP-156	156	ID-EGG-288
188	ID-INL-150	150	ID-EGG-141
298	ID-INL-155	155	ID-EGG-288
146	ID-MDO-803	803	ID-EGG-132
160	ID-MDO-824	824	ID-EGG-134
77	ID-MDO-826	826	ID-EGG-114
89	ID-MDO-827T	827	ID-EGG-114T
58	ID-MDO-834	834	ID-EGG-112
59	ID-MDO-835	835	ID-EGG-112
60	ID-MDO-836	836	ID-EGG-112
304	ID-MDO-838	838	ID-EGG-288
191	ID-MDO-842	842	ID-EGG-141
305	ID-MDO-847	847	ID-EGG-288
306	ID-MDO-848	848	ID-EGG-288
29	ID-OFS-111	111	ID-EGG-102
157	ID-OFS-121	121	ID-EGG-134
293	ID-RFO-000	0	ID-EGG-287
28	ID-RFO-001	1	ID-EGG-102
31	ID-RFO-002	2	ID-EGG-102
235	ID-RFO-003	3	ID-EGG-158
57	ID-RFO-004	4	ID-EGG-112
223	ID-RFO-005	5	ID-EGG-146
35	ID-RFO-007	7	ID-EGG-102
192	ID-RFO-090	90	ID-EGG-141
55	ID-RFO-112	112	ID-EGG-112
30	ID-RFO-113	113	ID-EGG-102
56	ID-RFO-114	114	ID-EGG-112
73	ID-RFO-116	116	ID-EGG-114
141	ID-RFO-117	117	ID-EGG-132
120	ID-RFO-118	118	ID-EGG-119
102	ID-RFO-119	119	ID-EGG-118
93	ID-RFO-122	122	ID-EGG-115
129	ID-RFO-123	123	ID-EGG-120
159	ID-RFO-241	241	ID-EGG-134
32	ID-RFO-290	290	ID-EGG-102
33	ID-RFO-292	292	ID-EGG-102
171	ID-RFO-300	300	ID-EGG-137
172	ID-RFO-301	301	ID-EGG-137
51	ID-RFO-302	302	ID-EGG-109
178	ID-RFO-312T	312	ID-EGG-137T
143	ID-RFO-320	320	ID-EGG-132
104	ID-RFO-328	328	ID-EGG-118
74	ID-RFO-330	330	ID-EGG-114
105	ID-RFO-335	335	ID-EGG-118
75	ID-RFO-336	336	ID-EGG-114
76	ID-RFO-337	337	ID-EGG-114
106	ID-RFO-338	338	ID-EGG-118
130	ID-RFO-339	339	ID-EGG-120
107	ID-RFO-360	360	ID-EGG-118
94	ID-RFO-371	371	ID-EGG-115
190	ID-RFO-374	374	ID-EGG-141
95	ID-RFO-375	375	ID-EGG-115
108	ID-RFO-376	376	ID-EGG-118
217	ID-RFO-430	430	ID-EGG-145

INEL key code	Waste stream code	Content Code	Previous waste stream code
218	ID-RFO-431	431	ID-EGG-145
219	ID-RFO-432	432	ID-EGG-145
121	ID-RFO-440	440	ID-EGG-119
122	ID-RFO-441	441	ID-EGG-119
123	ID-RFO-442	442	ID-EGG-119
131	ID-RFO-463	463	ID-EGG-120
52	ID-RFO-464	464	ID-EGG-109
144	ID-RFO-480	480	ID-EGG-132
145	ID-RFO-481	481	ID-EGG-132
109	ID-RFO-490	490	ID-EGG-118
78	ID-RFO-900	900	ID-EGG-114
161	ID-RFO-950	950	ID-EGG-134
79	ID-RFO-970	970	ID-EGG-114
61	ID-RFO-976	976	ID-EGG-112
62	ID-RFO-978	978	ID-EGG-112
193	ID-RFO-990	990	ID-EGG-141
294	ID-RFO-9999	9999	ID-EGG-287
240	ID-TAN-162	*	ID-EGG-162
241	ID-TAN-163	*	ID-EGG-163
779	LB-W011	*	
774	LB-W012	*	
780	LB-W014	*	
781	LB-W017	*	
782	LB-W018	*	
783	LB-W019	*	
Non-mixed waste			
764	CH-ANL-RDA	*	
214	ID-BTO-012TN	12	ID-EGG-144TN
154	ID-BTO-081TN	81	ID-EGG-132TN
207	ID-INL-153N	153	ID-EGG-144
162	ID-MDO-825N	825	ID-EGG-134N
36	ID-RFO-095	95	ID-EGG-102N
173	ID-RFO-115N	115	ID-EGG-137N
174	ID-RFO-310N	310	ID-EGG-137N
175	ID-RFO-370N	370	ID-EGG-137N
189	ID-RFO-372N	372	ID-EGG-141
194	ID-RFO-425N	425	ID-EGG-141N
96	ID-RFO-960N	960	ID-EGG-115N
37	ID-RFO-995N	995	ID-EGG-102N
208	ID-TRA-154N	154	ID-EGG-144

a. Radiological information for activity less than 100 nCi/g is included for some transuranic labeled waste streams in Table 4.

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
Mixed Waste = 1											
2	1	155	ID-AEO-100	100	GENERAL PLANT WASTE	This waste steam, generated at Argonne National Laboratory-East, contains combustible and noncombustible items such as paper, rags, rubber gloves, plastic bottles, glassware, small tools, balances, and empty metal cans. The waste is usually separated into combustible and noncombustible streams. Prior to 1981, small amounts of absorbed organic wastes are included. Waste packaged prior to 1982 contains potentially unstable materials. The waste is packaged in bins. No free liquids should be present. There may be small amounts of sludges. The waste contains contaminated gas cylinders which are empty and have open valves. Aerosol cans may also be included. Prior to 1981, potentially unstable material such as nitrated organic resins and ether-based scintillation fluids were also included. Wastes are packaged in 3- and 5-gallon cans and the 55-gallon drums are segregated into combustible and noncombustible streams and placed in M-III bins.	Argonne National Laboratories-East	2	1	2	3
2	1	156	ID-AEO-101	101	CUT UP GLOVEBOXES	This waste stream, generated at Argonne National Laboratory-East, contains glovebox sections and associated equipment from decontamination and decommissioning operations. The waste is predominantly noncombustible. Organic content is around 3 lb/ft3. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. This waste is contained in M-III bins with half or full-sized plywood box liners. Miscellaneous items such as machines, tools, glassware, piping, filters, and cinderblock are contained in 20-mil PVC bags, heat sealed, and placed in the plywood liners. Gloveboxes are dismantled, wrapped in one or more layers of PE, and placed in the liners.	Argonne National Laboratory-East	2	1	2	3
2	1	297	ID-AEO-102	102	ABSORBED LIQUIDS	This waste comes from Argonne National Laboratory-East. It consists of liquids adjusted to pH 10 using NaOH which are then absorbed in vermiculite. No hazardous constituents have been identified in the waste.	Argonne National Laboratory-East	3	1	2	3
2	1	206	ID-AEO-104	104	ALPHA HOT CELL WASTE	This waste stream, generated at Argonne National Laboratory-East, contains alpha hot cell waste. Noncombustible and combustible waste are segregated. Combustible wastes include: paper, plastic and PVC containers, rubber O-rings and gloves, rags, and Q-tips. Noncombustible wastes include lab equipment, tools, fixtures, glassware, pipe, tubing, fitting, fasteners, firebrick, ferrous and nonferrous metal scraps and parts, and small electric motors. Sodium in the waste is reacted with ethyl alcohol, mixed with pelletized clay, and dried. Nitrates and oxidizing agents are neutralized or reduced, mixed with peletized clay, and dried to ferrous or ferric salts. The average organic content is 5 lb/ft3. The combustible content of some containers exceeds 25 volume percent, including packaging. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Thermal power does not exceed 10 watts per package. Surface dose rates average 5.3 R/hr and are limited to 30 R/hr. The waste is packaged in 17C 30-gallon drums. Individual waste items may be loose, contained in 4-inch diameter by 10-inch high portal cans, or contained in 1-gallon paint cans. Some metal or glass wastes are compacted. Some items may be contained in 7.5-gallon steel buckets, and then packaged, two buckets per package, in heat-sealed PVC bags. Since 1983, the heat-sealed bags are lined with kraft paper. These buckets of PVC-bagged waste contained in a 30-gallon drum liner and sealed inside another 20-mil PVC bag in a 30-gallon steel drum. The maximun weight for each drum is 200 lbs, and the maximum dose rate is 30 R/hr.	Argonne National Laboratory-East	2	2	2	3
2	1	300	ID-ANL-161	161	ANL-W ANALYTICAL CHEMISTRY LAB GLASSWARE	This waste stream was generated at ANL-W. It consists of glassware, paper, poly, and miscellaneous hardware generated during analytical chemistry laboratory operations. ID-ANL-161 contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Since storage data for this content code have not been differentiated between low-level and transuranic classifications, all radiological characterization data for this content code are reported in the ALLW table. Low level and transuranic radionuclide and alpha activity concentration data are provided separately.	Idaho National Engineering Laboratory	2	2	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	158	ID-BCO-201	201	NONCOMBUSTIBLE SOLIDS	This waste stream, generated at Battelle Columbus Laboratories, contains noncombustible items such as tools, crucibles, piping, valves, pieces of equipment, lead bricks, plexiglass , and filters. The organic content is minimal. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Prior to packaging, each waste item is given a smear test and then triple contained in either nylon reinforced plastic sheeting or PE bags. The waste is either placed in 55-gallon drums fitted with 90-mil liners or in M-III bins. Some drums which do not meet INEL packaging criteria are also overpacked in bins.	Battelle Columbus Laboratories	2	1	2	3
2	1	301	ID-BCO-202	202	COMBUSTIBLE SOLIDS	This waste stream, generated at Battelle Columbus Laboratories, contains such combustible items as wood, plastic suits, nylon reinforced plastic tent structures, shoe covers, rubber golves, and air hose. The waste is from decontamination and deactivation of the plutonium laboratory. The average wastes organic material content may range from 6 lb/ft3 (including the plywood liner) for bins to 8 lb/ft3 (excluding the 90-mil liner) for drums. No significant levels of fines should be present. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Each waste item is given a smear test and then triple-wrapped in nylon reinforced plastic or triple-bagged in PE bags. The items are then placed inside 55-gallon drums with 90-mil liners, or in type M-III bins with non-removable plywood liners. Type M-III bins have also been used to overpack 17H drums that do not meet INEL packaging criteria.	Battelle Columbus Laboratories	1	1	2	3
2	1	302	ID-BCO-203	203	PAPER, METALS, GLASS	This waste stream, generated at Battelle Columbus Laboratories, contains a mixture of combustible and noncombustible items in roughly equal proportions. Combustible items include paper and paper products. Noncombustibles are primarily metal and some glass. The organic content is about 9 lb/ft3 in drums and about 5 lb/ft3 in bins. Combustibles, including packaging, may exceed 25 volume percent. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Prior to packaging, each waste item is given a smear test and then triple contained in either nylon reinforced plastic sheeting or PE bags. The waste is placed in 55-gallon drums fitted with 90-mil liners, or else placed in M-III bins. Some drums which do not meet INEL packaging criteria are also overpacked in bins.	Battelle Columbus Laboratories	2	1	2	3
2	1	303	ID-BCO-204	204	SOLIDIFIED SOLUTIONS	This waste comes from Battelle Columbus Labs. It is a Turco soap decontamination solution (used to decontaminate glove boxes from a Pu lab) which is solidified in Plaster-of-Paris.	Battelle Columbus Labs	3	1	2	3
2	1	72	ID-BTO-010	10	COMBUSTIBLES	This waste stream, generated at Bettis Atomic Power Laboratory, consists primarily of rags, gloves, plastic, paper, carbo-wax, filters, oil-contaiminated "absorbal" (diatomaceous earth), and rubber. The waste stream may also contain noncombustible items. The waste organic material may exceed 14 lb/ft3 for drums. Limited fines are expected from floor sweepings, powder, etc. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric, or corrosive materials. Small waste items are wrapped in plastic and placed inside 3.25-inch diameter by 7-inch high tin-plated steel cans with screw-on lids. The can is placed inside a steel "juice can" with roll-seam sealed lids. Larger items are wrapped in plastic and placed inside 4.375-inch diameter by 20 or 24-inch high tin-plated steel can. The sealed can was wrapped in plastic and placed inside 55-gallon waste drums lined with 90-mil drum liners. Between 15-80 cans fit in a drum. Prior to 1974, each drum was assayed by calculating weight differences to determine fissile content. After 1974, a U-232 assay gauge was used.	Bettis Atomic Power Laboratory	1	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	142	ID-BTO-020	20	NONCOMPRESSIBLE, NONCOMBUSTIBLE	This waste stream, generated at Bettis Atomic Power Laboratory, contains noncompressible and noncombustible items such as absolute filters, solidified chemical waste, contaminated metal equipment, furnace brick, and highly contaminated glovebox equipment. Metal scrap could include bars, sheet, fixtures, small equipment tools, etc. made of carbon steel, stainless steel, inconnel, aluminum, copper, brass, and zirconium. Chemical wastes include spent chemical solutions and associated solids from the isotope and isotopic dilution analysis of nuclear fuel specimens. The residues were neutralized before being either mixed with absorbent material or solidified. The organic content is less than 14 lb/ft3. There may be some particulate material in the waste from absolute filters. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in the waste. Trace amounts of nitric acid or organic contaminants may be present. Individual waste items are separately packaged in plastic wrapping. Depending on size, some wrapped items are placed in (a) 3-1/4-inch diameter by 7-inches high screw-top, tin-plated steel cans, placed inside roll-seamed juice cans, or (b) larger 4-3/8-inch diameter by 20 to 24-inch high tin-plated steel cans. Chemical solutions are neutralized to a pH between 6-8 and mixed with "absorbal" in PE bottles or solidified in metal cans (which are wrapped in plastic..) These items are then placed inside prepared 55-gallon drums lined with 90-mil liners. Each drum was assayed by calculated weight differences, chemical analysis, or using an assay gauge.	Bettis Atomic Power Laboratory	3	1	2	3
2	1	34	ID-BTO-030	30	SOLIDIFIED GRINDING SLUDGE, ETC.	This waste steam, generated at Bettis Atomic Power Laboratory, consists of solidified grinding sludge and associated filters, rags, etc. The sludge can contain abraded grinding wheel material, which includes diamond dust, aluminum oxide, carborundum, and rubber. The waste is in either powder or cakes and contains not more than 10% of other waste items. The waste contains high levels of fines. In addition, the drums contain free liquids. The estimated organic content is less than 1 lb/ft3. No particle size data is provided. No free liquids should be present. No explosive, pyrophoric, or corrosive material should be in the waste. Both 17c and 6m 55-gallon drums were used for packaging the waste. Fissile content was determined by calculating the weight difference by chemical analysis or by an assay gauge.	Bettis Atomic Power Laboratory	3	2	2	3
2	1	299	ID-CPP-156	156	CHEM CELL RIP-OUT	This waste stream, generated at Idaho National Engineering Laboratory, contains steel piping, vessels, scaffolding, anti-contamination clothing, concrete, and welding slag. The organic content is minimal. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Most of the waste was placed into prepared boxes at the ICPP. Some of the waste is double wrapped in plastic. The boxes are FRP-reinforced plywood. Absorbent was added if moisture was present. ID-CPP-156 contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Since storage data for this content code have not been differentiated between low-level and transuranic classifications, all radiological characterization data for this content code are reported in the ALLW data table. Low level and transuranic radionuclide and alpha activity concentration data are provided separately.	Idaho National Engineering Laboratory - ICPP	2	1	2	3
2	1	188	ID-INL-150	150	LABORATORY WASTE	This waste stream, generated at Idaho National Engineering Laboratory, contains laboratory waste form ANL-W including fluxwire, fission counters, HEDL samples, analytical samples dissolved and absorbed on Oil-Dri, glassware, vials, miscellaneous waste from gloveboxes, dissolved pellets absorbed on Oil-Dri, enriched and normal U3O8 pellets, aluminum foil, and capsules, TREAT waste capsules, chlorinated ion exchange resins, Pu sources, and irradiated GE caps. Lab waste from ICPP includes Kimwipes, trash, glassware, dissolved samples absorbed in Oil-Dri, analytical samples, gloves, etc. The organic content is highly variable, but is usually less than 14 lb/ft3. No sludges or free liquids should be present. Absorbents were added if moisture was detected in any wastes. No explosive or pyrophoric materials should be in this waste. Depending on when the wastes were packaged, the individual waste items may be contained in plastic, metal, or glass containers. Some of the containers are 2R containers. The containers are placed inside 55-gallon drums lined with two plastic liners. Some of the containers are wrapped in plastic, and others are placed directly into the drums. Oil-Dri absorbent is added if moisture is present.	Argonne National Laboratory-West and Idaho Chemical Processing Plant	2	2	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	298	ID-INL-155	155	SCRAP	This waste stream, generated at Idaho National Engineering Laboratory, consists of a plastic glovebox, a hydraulic pump containing oil, vacuum pumps, centrifuges, tools, and experimental fuel capsules. The presence of hazardous materials is not known, but some absorbed oil is likely. The drums do not contain free liquids, but the box contains free liquids. Organic content of the box may exceed 6 lb/ft3. No sludges or free liquids should be present, except for the hydraulic pump oil in the box. No explosive or pyrophoric materials should be in this waste. The waste was placed directly into prepared drums or boxes, or else packaged in 1-gallon cans which were placed in prepared drums. The waste was generated in 1975 and 1979. Some of the waste is double wrapped in plastic. It is not known if the box is FRP coated.	Idaho National Engineering Laboratory	2	1	3	3
2	1	146	ID-MDO-803	803	METAL, EQUIPMENT, PIPES, VALVES, ETC.	This waste comes from Mound Laboratory and consists of stainless steel, carbon steel, and small amounts of aluminum-metal wastes in the form of valves, piping, wrenches, nuts, bolts, stainless steel tubing, spatulas, pans, hotplates, ringstands, etc. Limited amounts of combustible and noncombustible wastes are also present from Content Codes 810, 811, 812, 813, 814, 826, and 832. Content Code 832 is liquid mercury. Content code 812 is spent ion-exchange resin. Most of the waste is metal waste that is primarily from D&D operations. Some of the metals were leached with nitric acid, ultrasonically cleaned, and dried to remove above-discard amounts of plutonium. Waste is packaged in 1-gallon, plastic coated cardboard cartons which are in turn placed in two layers of PE bags and then placed into a 55-gallon drum. Some large metal waste is taped on the rough edges and sealed in two layers of plastic and then placed into a 55-gallon drum. Drums have drum rigid liners and a drum bag. Each carton is individually assayed. Contaminated elemental mercury from Content Code 832 must be segregated. The specific locations, by drum, of waste cartons from Content Code 832, mercury, are known. Therefore, the waste drums containing mercury will be easily identified and the mercury will be removed.	Mound Laboratory	3	1	2	3
2	1	160	ID-MDO-824	824	NONCOMBUSTIBLE EQUIPMENT BOXES	This waste stream, generated at Mound Laboratory, consists of large, noncombustible wastes such as tanks (stainless steel and tantalum), piping, ducting, conduit, electric motors, pumps, metallurgical presses, lathes, dissolvers, evaporators, furnaces, ladders, vacuum sweepers, 24 x 24 x 12-inch HEPA filters, fume hoods, gloveboxes, plexiglass glovebox windows, and floor tile. Limited amounts of combustible wastes (plastic tanks, fiberglass gloveboxes, plastic contamination control tents, etc.) are also included. Boxes filled with HEPA filters and cartons of resins may both contain excessive fines. Combustibles may exceed 25 volume percent in some boxes. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Some emptied cylinders with opened valves and punctured aerosol cans are included in the waste. All of this waste is packaged in standard or oversized boxes. Each item is generally wiped with wet rags and single or double contained in plastic. Open ends or openings are sealed. Oils or other liquids are drained from any equipment prior to packaging. Florco absorbent is added to each box for residual liquids. Polyurethane foam is added if necessary to help stabilize large equipment. Some boxes contain smaller plywood boxes, cartons, cans, or drums of waste items. All plywood boxes are coated with fiberglass-reinforced polyseter (FRP). Oversized boxes are not lined with plastic or cardboard liners.	Mound Laboratory	3	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	77	ID-MDO-826	826	COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWE	This waste stream, generated at Mound Laboratory, includes two different types of waste depending on when the waste was generated. Prior to 1980, this content code was used for glovebox floor sweepings and rust. The actual amount of floor sweepings is small. After 1981, this content code is used for large, combustible waste items such as plastic tanks, plexiglass shielding and windows, wood, and fiberglass conveyor glovebox sections. These types of large combustible wastes were included in Content Code 824 prior to 1980. Limited amounts of smaller combustibles such as shoe covers and surgical gloves are also included. The organic content exceeds 6 lb/ft3. The waste is 100 volume percent combustible. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. All of this waste is packaged in standard boxes. Each item is generally rinsed with water, wiped with wet rags and single or double contained in plastic. Some items were placed directly into boxes without additional containment, depending on contamination levels. Floor sweepings are containted in 1-gallon plastic-coated cardboard cartons. Florco absorbent is added to each box for residual liquids. Each box is assayed using a box counter, and spot radiation and contamination checks are also done.	Mound Laboratory	1	1	2	3
2	1	58	ID-MDO-834	834	HIGH-LEVEL ACID	This waste comes from Mound Laboratory. It consists of acid liquids, mainly nitric, absorbed onto a clay called Florco. The Florco is then placed in a drum bag in a drum lined with a 90-mil poly liner. Analytical assay values are available for each drum.	Mound Laboratory	3	1	2	2
2	1	59	ID-MDO-835	835	HIGH-LEVEL CAUSTIC	This waste comes from Mound Laboratory. It consists of caustic waste and neutralized waste liquids, absorbed onto a clay called Florco. The Florco is then placed in a drum bag in a drum lined with a 90-mil poly liner. Analytical assay values are available for each drum.	Mound Laboratory	3	1	2	2
2	1	60	ID-MDO-836	836	HIGH-LEVEL SLUDGE/CEMENT	This waste is from Mound Labs. The waste consists of shower water, decontamination water, cooling water, and some acids and caustics which have been solidified in portland cement. The cement is poured into a drum lined with a 90-mil poly liner. Analytical assay values are available on a batch basis.	Mound Laboratory	3	1	2	2
2	1	304	ID-MDO-838	838	<10 nCi/g NONCOMBUSTIBLE	There is little information on this code. One drum of this waste was mistakenly shipped in 1975 from Mound Laboratory to INEL instead of a commercial disposal facility. Mound records indicate that this drum is combustible waste. According to the assay information, this waste has low TRU concentration.	Mound Laboratory	2	1	2	3
2	1	191	ID-MDO-842	842	CONTAMINATED SOIL	This waste, generated at Mound Laboratories, consists of soil, including small rocks and pebbles, generated from cleanup of a leak. All soil waste was dry when packaged. A few waste boxes also include picks, shovels, metal cans, rubber gloves, booties, respirators, plastic, and possibly an air hammer and chisel. Soils waste was packaged in small, plastic lined plywood boxes (42 x 20 x 39 inch); other waste was then placed on top of the soil before the box was sealed. Four of the small boxes were then packaged in a standard larger waste box (4 x 4 x 7 feet) lined with fiberglass-reinforced polyester. Assay was performed using radiochemical analysis on core samples taken from the contaminated area.	Mound Laboratory	3	1	2	3
2	1	305	ID-MDO-847	847	LSA < 100 nCi/g COMBUSTIBLE	This waste stream is from Mound Laboratory and consists of nonline generated combustible wastes such as plastic sheeting, paper, reagents, gloves (rubber,cloth), plastic bottles, wood, paper suits, and shoe covers. About 75% of the waste is compacted. The waste may be either dry or damp. This waste is mostly low specific activity (LSA). The average waste organic material content usually exceeds 14 lb/ft3 for drums. There should be no sludges, free liquids, explosives, compressed gases, pyrophoric, toxic, or corrosive materials. Combustibles were packed into plastic bags which were sealed and compacted inside prepared drums. The compaction ratio is about 4:1. About 25% of the waste is not compacted, due to the presence of noncompactible items such as wood. Drums were prepared according to post-1972 procedures. Prior to January 1982, drums were scanned for gamma radiation and assayed if readings above background levels were detected. After 1982, all drums were assayed.	Mound Laboratory	1	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	306	ID-MDO-848	848	LSA < 100 nCi/g NONCOMBUSTIBLE	This waste stream, generated at Mound Laboratory, consists of nonline generated noncombustible wastes such as tools, pipe, equipment, metal, glass, concrete, plaster, bricks, and dirt. Limited amounts of combustible wastes such as paper, rags, etc. are also included. The waste has the potential presence of excessive fines. Fines which may be present include soil, plaster, and concrete chips. The organic content is less than 14 lb/ft3. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. This waste stream is packaged in drums. Depending on size and contamination levels of individual items, the waste is contained in one or two plastic bags or placed directly into prepared waste drums. Each drum is lined with a 90 mil liner and a plastic bag. Florco absorbent is added to the bottom of the drum if dampness is suspected. Plywood spacers are added as needed on top of the liner lid. Each barrel is assayed by a drum counter or by portable gamma detecting instruments.	Mound Laboratory	3	1	2	3
2	1	29	ID-OFS-111	111	RESEARCH GENERATED WASTE NONCOMPACTIBLE	This waste includes waste generated at ANL-East and certified solid wet sludge from the Rocky Flats Plant. The ANL-E waste is derived from research activities performed in a laboratory environment. The waste includes concrete and laboratory apparatus. The waste is packaged in 55-gallon drums or in SWBs (standard waste boxes). The solid wet sludge from Rocky Flats Plant is cemented or dewatered sludge precipitated from aqueous waste treatment processes. Soils that are not contaminated with organic chemicals are also included. Rocky flats waste included in 111 is IDC 007, Building 374 solidified sludge. IDC 007 consists of immobilized low-level mixed waste materials from decontamination-precipitation and neutralization processes in the Building 374 Liquid Waste Treatment Facility. The wastewater treatment operation includes neutralization, radioactive decontamination (precipitation), filtration, evaporation, spray drying, salt immobilization, and filtrate sludge immobilization. The sludge from the rotary drum vacuum filter has a dry appearance but is still very moist. The dried sludge was transferred from the dryer directly into a 55-gallon drum. The sludge was dried, or had portland cement and diatomite added to absorb liquids. Note: Waste matrix composition listed is for Rocky Flats Waste.	Rocky Flats Plant and Argonne National Laboratory-East	3	1	2	2
2	1	157	ID-OFS-121	121	DECONTAMINATION AND DECOMMISSIONING WAST	This waste is generated at Argonne National Laboratory-East and Rocky Flats. The ANL-East waste is derived from decontamination and disposal of facilities and ancillary systems. The composition of the waste is unknown. The waste generated at Rocky Flats contains mainly Benelex which is a dense, laminated, lignocellulose hardboard made from wood chips and particles (Masonite Corp., Type 402). The Benelex is generally 2 inches thick. Some of the Benelex has lead shielding attached to it. Metal hinges and angle iron strongbacks are also present. Plexiglass is the other major constituent in the waste. The plexiglass thickness ranges from 2 to 4 inches. Both the Benelex and the plexiglass are combustible. The wase is packaged in standard RFP drums and boxes. Waste matrix composition listed is based on the opening and examination of several drums of IDC 302 waste. More than 94% ofthis waste is in boxes, where a larger percentage of benelex (large pieces) can be expected.	Argonne National Laboratory-East and Rocky Flats Plant	3	1	2	3
2	1	293	ID-RFO-000	0	NOT RECORDED - UNKNOWN	This waste stream was received prior to 1973. As container specific information was not entered into the database prior to 1973, these wastes are uncategorized. It is expected to be similar to other Rocky Flats was es received since 1973.	Mostly Rocky Flats Plant	2	2	3	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	28	ID-RFO-001	1	FIRST STAGE SLUDGE	Waste consists of a wet sludge produced from treating aqueous process wastes, such as ion exchange column effluent, distillates, and caustic scrub solutions generated by Plutonium Recovery Operations (Building 771). Portland cement is added to the waste package for absorption of free liquids. Waste drums may periodically contain surgeons' gloves, glovebox gloves, etc. Since the fall of 1979, first-stage sluge (IDC 001) and Second stage sludge (IDC 002) have been combined into Content Code 1 - Combined sludge. Sludge is produced by treating aqueous wastes by the carrier precipitation process. Aqueous wastes are made basic, if necessary, with sodium hydroxide. Radioactive elements such as plutonium and americium are chemically precipitated from the liquid waste. Treatment chemicals include ferric sulfate, calcium chloride, magnesium sulfate, and flocculating agents. The treatment process produces a precipitate of the hydrated oxides of iron, magnesium, aluminum, silicon, etc., which also carries the hydrated oxides of plutonium and americium. The precipitate or slurry is filtered to produce a sludge containing 50 to 70 weight percent water. Liquid wastes were analyzed for fissile content prior to release from Building 771 and 774, and were retained at Building 771 for further treatment if contaminated with above-discard amounts of plutonium.	Rocky Flats Plant	3	2	2	2
2	1	31	ID-RFO-002	2	SECOND STAGE SLUDGE	Waste consists of a wet sludge produced from treatment of all other plant radioactive and/or chemical contaminated wastes and further treatment of the first-stage effluent. Portland cement was added to the waste package for absorption of free liquids. Second-stage sludge drums packaged prior to 1973 may contain other waste such as electric motors, bottles of chemical (usually liquid) wastes, mercury and lithium batteries, and small amounts of contaminated mercury in pint bottles. Radioactive sources were also periodically included in second-stage drums through 1979. Since the fall of 1979, Second stage sludge (IDC 002) have been combined into Content Code 1 - Combined sludge. Content code 2 is no longer used. Sludge is produced by treating aqueous wastes by the carrier precipitation process. Aqueous wastes are made basic, if necessary, with sodium hydroxide. Radioactive elements such as plutonium and americium are chemically precipitated from the liquid waste. Treatment chemicals include ferric sulfate, calcium chloride, magnesium sulfate, and flocculating agents. The treatment process produces a precipitate of the hydrated oxides of iron, magnesium, aluminum, silicon, etc., which also carries the hydrated oxides of plutonium and americium. The precipitate or slurry is filtered to produce a sludge containing 50 to 70 weight percent water.	Rocky Flats Plant	3	2	2	2
2	1	235	ID-RFO-003	3	ORGANIC SETUPS, OIL SOLIDS	Organic setups are produced from treatment of liquid organic wastes generated by various plutonium and nonplutonium operations. The organic wastes are mixed with calcium silicate to form a grease of paste-like material. Small amounts of oil-dri absorbent are usually mixed with the waste. Organic wastes such as degreasing agents (primarily trichloroethane), lathe coolant (machining oil and carbon tetrachloride), and hydraulic oils are generated primarily by plutonium fabrication operations. Other organic wastes include carbon tetrachloride; trichloroethylene; hydraulic, gearbox, and spindle oils; and trace concentrations of miscellaneous organic laboratory wastes. (organophosphates, nitrobenzene, etc.) In addition, unknown volumes of oil containing polychlorinated biphenyls (PCB) were processed with other organic wastes until 1979. Degreasing solvents generated by Building 444 operations are contaminated with beryllium.	Rocky Flats Plant	3	1	1	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	57	ID-RFO-004	4	SPECIAL SETUPS (CEMENT)	This waste, generated at Rocky Flats Plant, consists of liquids absorbed on a cement mixture. The liquid wastes are not compatible with aqueous treatment processes and are handled separately due to their plutonium complexing nature. The majority of complexing chemical wastes are generated by various operations at Building 771, Plutonium Recovery operations. All waste are processed by aqueous waste treatment, building 774. The complexing chemicals include some alcohols, organic acids, and versenes (trademark for a series of chelating agents based on EDTA). All liquids are analyzed or assayed prior to release to Building 774 for treatment. Only below-discard contaminated wastes are released for processing. Above discard contaminated wastes are processed by plutonium recovery operations. The cement mixture used for absorbing complexing liquid wastes is composed of approximately 190 lb of Portland cement and 50 lb of pipe insulation cement, such as magnesia cement. The cements are placed in a prepared 55-gallon drum; the drum is them placed on a drum roller and rolled to ensure mixing of the cements. All liquid wastes are made basic prior to adding them to the cement mixture. Approximaterly 100 liters of liquid waste is then poured on the cement mixture and allowed to solidify. Aproximately 10 to 15 lb of portland cement is then added on top of the cemented liquid waste before the o-ring bag is removed from the glovebox. Since 1972, drums have been inspected for free liquids, proper packaging, and the use of proper content code. One to two quarts of oil-dri was placed on top of the outer, sealed polyethylene drum bag after inspection. In 1982, vermiculite replaced oil-dri to fill the remaining space between the outer, sealed polyethylene drum bag and the top of the rigid liner. Some drums may be filled with the empty polyethylene bottles used to transport the liquid waste to Building 774. A small amount of portland cement is added to each bottle before placement in a drum.	Rocky Flats Plant	3	1	2	2
2	1	223	ID-RFO-005	5	EVAPORATOR SALTS	Waste is generated at Rocky Flats Plant from aqueous waste treatment in building 774. Waste consists of a salt residue generated from concentrating and drying liquid waste from the solar evaporation ponds. The approximate chemical makeup of the salt is 60% sodium nitrate, 30% potassium nitrate, and 10% miscellaneous. Limited amounts of other wastes such as surgeons' gloves, paper, rags, and metal may be found in the waste drums. Portland cement was added to damp or wet salt when necessary. The majority or salt drums in storage at the INEL should be contaminated with <10 nCi/g TRU. Salt waste is no longer shipped to the INEL. Since 1972, drums have been inspected for free liquids, proper packaging, and use of the proper content code. After inspection, approximately 1 to 2 quarts of Oil-Dri was placed on top of the outer sealed polyethylene drum bag.	Rocky Flats Plant	3	1	2	3
2	1	35	ID-RFO-007	7	BLDG 374 DRY SLUDGE	Building 374 solidified sludge consists of immobilized low-level mixed waste materials from decontamination-precipitation and neutralization processes in the Building 374 Liquid Waste Treatment Facility. The wastewater treatment operation includes neutralization, radioactive decontamination (precipitation), filtration, evaporation, spray drying, salt immobilization, and filtrate sludge immobilization. The sludge from the rotary drum vacuum filter has a dry appearance but is still very moist. The dried sludge was transferred from the dryer directly into a 55-gallon drum. The resulting waste consisted of dispersible fines and was assigned IDC 007.	Rocky Flats Plant	3	1	2	2
2	1	192	ID-RFO-090	90	DIRT	This waste stream, generated at the Rocky Flats Plant, contains dry dirt and soil generated from cleanup of spills, leaks, etc. It may also include evaporator pond sludge. A limited amount of the waste may be damp. A limited amount may contain combustibles such as coveralls and gloves. Dirt is packaged in standard RFP drums. Sometimes the dirt is bagged before being placed in the drum.	Rocky Flats Plant	3	1	2	3
2	1	55	ID-RFO-112	112	SOLIDIFIED ORGANICS	Solid organic waste consists of absorbed organic liquids from production or laboratory processes. The content code certifiably packaged as 112 includes IDC 003.	Rocky Flats Plant	3	1	2	2
2	1	30	ID-RFO-113	113	SOLID LAB WASTE	Solid lab waste consists of cemented or absorbed neutralized aqueous laboratory waste and includes some waste from IDCs 004 and 292. Waste matrix composition listed is for IDC 004 waste, which accounts for most of the waste in this content code.	Rocky Flats Plant	3	1	2	2

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	56	ID-RFO-114	114	SOLIDIFIED INORGANIC PROCESS SOLUTION	Alpha contaminated solid inorganic process solution waste consists of cemented inorganic particulates of sludge-like (not chemically precipitated) wastes from plutonium recovery operations. The waste is packaged in 55-gallon drums or SWBs. Content code 114 includes some waste from IDCs 292 and 432. Waste matrix composition listed is for Item Description code (IDC) 292, the bulk of the waste. The waste is assigned a matrix parameter code (MPC) of S3123, based on IDC 292. The IDC 432 portion of the waste stream is MPC S3211.	Rocky Flats Plant	3	1	2	2
2	1	73	ID-RFO-116	116	COMBUSTIBLE WASTE	Combustible waste consists of cellulosic, plastic or cloth waste from various processes. The content codes certifiably packaged and included in 116 are 330, 336, 337, and 491.	Rocky Flats Plant	1	1	2	3
2	1	141	ID-RFO-117	117	METAL WASTE	Metal waste consists of discarded metal. The IDCs certifiably packaged and included in 117 are 320, 321, 480, and 488.	Rocky Flats Plant	3	1	2	3
2	1	120	ID-RFO-118	118	GLASS WASTE	Glass waste consists of discarded labware, windows, containers or raschig rings from various processes. The IDCs certifiably packaged and included in 118 are 440, 441, and 442. Waste matrix composition listed is for IDC 440. For IDCs 441 and 442, the "Other Glass" matrix would be mostly raschig rings.	Rocky Flats Plant	3	1	2	2
2	1	102	ID-RFO-119	119	HEPA FILTER WASTE	HEPA filter waste consists of HEPA filters or processed filter media from filter change operations. The IDCs certifiably packaged and included in 119 are: 376 and 490.	Rocky Flats Plant	2	1	2	1
2	1	93	ID-RFO-122	122	INORGANIC SOLID WASTE	Inorganic solid waste consists of waste such as insulation, firebrick, and concrete. The IDCs certifiably packaged and included in 122 are 371, 374, 377, and 422. The majority of the waste in this content code is waste generated during maintenance/stripout activities. (i.e. replacement of firebrick or insulation.) Waste matrix composition listed is for IDC 374, which makes up the bulk of the waste in this content code.	Rocky Flats Plant	3	1	2	3
2	1	129	ID-RFO-123	123	LEADED RUBBER	Leaded rubber waste consists of discarded leaded glovebox gloves and leaded aprons. The IDC packaged and included in 123 is 339.	Rocky Flats Plant	2	1	2	2
2	1	159	ID-RFO-241	241	AMERICIUM PROCESS RESIDUE	This waste stream, generated at the Rocky Flats Plant, consists of piping, flanges, valves, tools, equipment, PVC piping, glassware (flasks, broken ion exchange columns, etc.), glass filters, PE bottles, leaded glovebox gloves, paper, and plastics. Wastes were shipped only in 1972 and 1973, from renovation of the americium recovery line. Some of the containers are lead-lined. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Some dried residue of 7 N nitric acid, hydrochloric acid, and ammonium thiocyanate may be present. Smaller waste items are single and double contained in PE or PVC bags. Most of the bagged waste was placed in 13-inch high by 15.5-inch diameter Fibre-Paks. Larger items are placed directly inside 55-gallon drums. Fibre-Paks are usually wrapped with lead tape. Two Fibre-Paks fit in each drum. Most drums were lead shielded with 1/16- to 1/8-inch thick lead sheeting. Each drum was assayed. The waste matrix composition listed is based on drum sampling. No glassware or glass filters were contained in the sampled containers.	Rocky Flats Plant	2	2	2	3
2	1	32	ID-RFO-290	290	FILTER SLUDGE	This waste stream, generated at Rocky Flats Plant, consists of only one (1) drum of wet sludge from the incinerator off-gas system, recovery building filter plenums, pumps, etc. Content Code 290 was replaced with Code 292 in 1974. This waste contains free liquids. Organic content is less than 14 lb/ft3. No explosive, pyrophoric, or corrosive materials should be in the waste. The filter sludge was packaged in 1-quart ice cream cartons. Each carton was sealed. It is believed that each carton was bagged and sealed in a Vollrath 8802 stainless steel can. Cans were assayed and then placed in groups of 20 to 25 in prepared 55-gallon drums.	Rocky Flats Plant	3	1	2	2

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unInown
2	1	33	ID-RFO-292	292	CEMENTED SLUDGE	This waste stream, generated at Rocky Flats Plant, consists of sludge from the incinerator off-gas system, recovery building filter plenums, pumps, etc. Portland cement is added to absorb free liquids. The sludge may contain a limited number of surgical gloves. Content code 292 replaced Content Code 290 in 1974. Before 1977, sludge was sealed in PVC bags, double-contained in plastic and placed in 1-gallon metal paint cans. Portland cement was added to the bottom and top of the can. After 1977, sludge was placed in 1-gallon PE bottles with layers of Portland cement. Each can (or bottle) was assayed and placed in groups of about 25 into prepared 55-gallon drums. Drum preparation was in accordance with pre and post 1972 procedures. Starting in 1982, vermiculite replaced Oil-Dri as the material placed between the top of the waste material and the drum liner lid.	Rocky Flats Plant	3	1	2	2
2	1	171	ID-RFO-300	300	GRAPHITE	This waste stream, generated at the Rocky Flats Plant, consists of graphite molds used in casting plutonium metal. The waste may also include small amounts of surgical gloves. The graphite is in the form of broken mold pieces. Some of the graphite has been scarfed or wire-brushed to remove above-discard deposits of plutonium. The graphite molds are almost pure carbon and should be inert in storage. The waste is noncombustible, but if pulverized and well mixed it will burn. Fines are not packaged with the waste. Breakage and fines may result after packaging. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Graphite pieces may be packed directly into prepared 55-gallon drums or else first packed inside Fibre-Paks. The Fibre-Paks are 13 inches high by 15.5 inches in diameter. Sealed Fibre-Paks are sealed inside single (PVC) or double (PVC and PE) bags. Two Fibre-Paks are placed in each prepared 55-gallon drum. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures; and, since 1982, vermiculite instead of Oil-Dri was placed on top of the outer sealed PE drum bag.	Rocky Flats Plant	3	1	2	3
2	1	172	ID-RFO-301	301	GRAPHITE CORES	This waste stream, generated at the Rocky Flats Plant, is similar to graphite molds, Content Code 300. A graphite core is part of the shaped graphite mold used to cast plutonium metal. Some graphite molds are also included in this content code. This content code has not been used since 1977. The graphite has been broken into pieces, and some of the graphite has been scarfed or wire brushed to remove any above-discard deposits of plutonium. The graphite cores are almost pure carbon and should be inert in storage. The waste is noncombustible, but if pulverized and well mixed it will burn . Fines are not packaged with the waste. Breakage and fines may result after packaging. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Graphite core pieces may be packed directly into prepared 55-gallon drums or else first packed inside Fibre-Paks. The Fibre-Paks are 13 inches high by 15.5 inches in diameter. Sealed Fibre-Paks are sealed inside single (PVC) or double (PVC and PE) bags. Two Fibre-Paks are placed in each prepared 55-gallon drum. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures. Oil-Dri was placed on top of the outer sealed PE drum bag.	Rocky Flats Plant	3	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	51	ID-RFO-302	302	BENELEX AND PLEXIGLASS	This waste, generated at Rocky Flats Plant, consists of Benelex, which is used for neutron shielding, and Plexiglas glovebox windows. Lead sheeting (1/8 to 1/4 in. thick) may be attached to some benelex pieces. Benelex was usually coated with fire-retardant paint. In addition to Plexiglas, other types of glass such as leaded-glass may be present in the waste. The waste may include limited amounts of surgeons' gloves, metal hinges on Benelex gloveport doors, pieces of angle iron attached to larger pieces of Benelex, and rubber gaskets from glovebox windows. Content code 302 replaced content code 464 during 1973. The majority of waste drums will contain pieces of benelex (gloveport doors, etc.) generated from routine maintenance and renovation projects conducted primarily in 1972. Plexiglas and other types of glass may be found mixed in with the benelex and/or segregated and contained in a limited number of waste drums. Pieces of benelex waste were usually placed directly into prepared 55-gallon drums. Any contaminated Benelex was usually contained in plastic bags or wrapped in plastic sheeting. Plexiglas windows were usually contained in plastic before being placed in a prepared 55-gallon drum. Oil dri may have been added to the waste drums. The waste boxes were generated during 1973 and 1974 and are believed to contain larger pieces of benelex shielding on angle iron frames that were removed during final fire cleanup operations in building 776. It is believed that the benelex came from the south foundry line in building 776, which was not directly involved in the 1969 fire and was decontaminated and placed back in operation. The waste matrix composition listed is based on opening and examination of several drums of IDC 302 waste. More than 94% of this waste is in boxes, where a larger percentage of benelex (large pieces) can be expected.	Rocky Flats Plant	2	1	2	3
2	1	143	ID-RFO-320	320	TANTALUM	This waste comes from the Rocky Flats Plant and consists of used tantalum crucibles, funnels, funnel inserts, and pour-rods. The waste is packaged in standard RFP fashion. Sharp metal edges are taped before packaging. Other metals may include tungsten, platinum, and lead. Some lead-lined containers are included.	Rocky Flats Plant	3	2	2	3
2	1	104	ID-RFO-328	328	FULFLO INCINERATOR FILTERS	Ful-flo (trade name) filters are in-line cartridge filters used to remove particulates from specific waste streams. The filters are one piece molded filters and the filter media is a red fibrous material or polypropylene.	Rocky Flats Plant	2	1	2	3
2	1	74	ID-RFO-330	330	DRY PAPER AND RAGS	This waste stream is the largest combustible waste stream, comprising 55% of the category by weight. The waste stream is from Rocky Flats Plant and primarily consists of line- and nonline-generated dry combustible materials such as paper, rags, plastics, surgical gloves, cloth overalls and booties, cardboard, wood, wood filter frames, PE bottles, and laundry lint. Some combustibles may be damp or moist. Limited amounts of noncombustibles such as glass, concrete, cement, leaded glovebox gloves, batteries, and metal scrap may also be present. The average waste organic material content may range from 6 lb/ft3 for boxes to over 14 lb/ft3 for drums. Limited fines are expected from floor sweepings, powder, etc. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Depending on when and where the waste was generated at Rocky Flats, the waste packaging may vary. For wastes generated prior to 1975, packaging information is incomplete. Line-generated waste may be double contained in plastic or placed in PE bottles and then double bagged. Nonline-generated wastes were single-bagged .r placed directly into the waste container. Oil-Dri may have been added to some drums. After 1974, some waste was drummed, and some waste was placed in 4 ft x 4 ft x 7 ft boxes. Some combustibles are single, double or quadruple bagged or wrapped PVC and PE bags or plastic. Combustibles such as clothing and dryer lint are placed directly into 55 gallon drums. Some wastes are placed in 1-gallon PE bottles. Some drummed waste was repacked into boxes to reduce volume. During repacking, any noncombustibles were removed. Some boxes may contain moist combustible waste and up to 100 lb of Oil-Dri. Drums containing wastes from the Americium Recovery Line are lead-lined. Drums shipped prior to 1977 contain compacted wastes.	Rocky Flats Plant	1	2	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	105	ID-RFO-335	335	ABSOLUTE 8 X 8 FILTERS	This waste stream, generated at the Rocky Flats Plant, consists of absolute filters used for filtering intake and exhaust air from glovebox lines. The filters are composed of wood or particle board frames and an asbestos-type filter media. The waste may include limited amounts of combustible materials (surgical gloves, etc.). Several sizes of filters may be present. This code has not been used since 1975. Since then absolute filters were processed as Content Codes 338 (insulation and CWS filter media) or 376 (cemented insulation and filter media). Some of the drums may be lead-lined. There is a lack of information about the particulate on the filter media. Although there may be some organic material, it should be less than 14 lb/ft3. Significant amounts of respirable fines may be present. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in this waste, except for some residual amounts of nitric acid. Each filter is double contained in PVC and PE bags and assayed. Up to 12-20 filters are placed in each prepared drum. Small amounts of Oil-Dri are added to drums containing damp filters. Drums were packed according to the usual pre-1972 and post-1972 procedures.	Rocky Flats Plant	2	2	2	1
2	1	75	ID-RFO-336	336	MOIST PAPER AND RAGS	The waste stream is from the Rocky Flats Plant and primarily consists of damp or wet line- and nonline-generated dry combustible materials such as paper, rags, plastics, surgical gloves, canvas, cardboard, wood, PE bottles, and rubber. Some combustibles may be damp or moist. Moisture content may range from damp to wet, and may include water, soaps, nitric acid, or caustic solutions. Limited amounts of noncombustibles such as glass, concrete, cement, leaded glovebox gloves, and metal scrap may also be present. These wastes are mostly from decontamination and cleanup work and may be from any plutonium area. Wastes shipped to INEL after 1975 will require processing to remove free liquids, and aerosol cans. The average waste organic material content may range from 6 lb/ft3 for boxes to over 14 lb/ft3 for drums. Combustibles in the waste exceed 25 volume percent. Limited fines are expected from floor sweepings, powder, etc. There may be some free liquids present. No explosives or compressed gases are present after 1976. No aerosol cans are present after 1977. Prior to 1975 some spontaneous ignition material and nitric acid may be included. Depending on when and where the waste was generated at Rocky Flats, the waste packaging may vary. For wastes generated prior to 1975, packaging information is incomplete. Waste may be placed directly into drums, or single or double contained in plastic. Some waste may also be placed in PE bottles and then double bagged. Oil-Dri may have been added to some drums. Drums were prepared according to pre and post-1972 procedures. Inspections were done and adsorbents (Oil-Dri and vermiculite) were added according to standard procedures. Some waste was also containerized in plywood boxes. The waste is contained in one to four layers of plastic. Oil-Dri and portland cement were added in layers with the waste. Depending on moisture conditions, the amount of adsorbent varies from 25-200 lb per box. Boxes were prepared according to pre and post-1972 procedures. After 1974, waste was typically double contained in PVC and PE bags or else placed in PE bottles and then double-bagged. Adsorbent was not added to the waste. Until 1977, some of the waste was compacted in prepared waste drums. Some drummed waste was also repacked into boxes to reduce volume. All drums are assayed. The fissile content of boxes is determined from the combined assays of the waste drums emptied into the boxes. After 1980, boxes received a second assay. Drums containing wastes from the Americium Recovery Line and lead-lined.	Rocky Flats Plant	2	2	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	1	76	ID-RFO-337	337	PLASTICS, TEFLON, WASH, PVC	This waste stream is from the Rocky Flats Plant and consists of various types of plastics such as PE, polyvinyl chloride (PVC), Teflon (TFE), and nonleaded rubber items. The waste may be bags, vials, bottles, sheeting, and surgical gloves. Some other combustible wastes such as respirator facemasks and paper may be included. Some small amounts of noncombustible wastes may also be present. The average waste organic material content may range from 6 lb/ft3 for boxes to over 14 lb/ft3 for drums. Added adsorbents are not included in the fines evalutaion. There should be no sludges, free liquids, explosives, compressed gases, pyrophoric, toxic, or corrosive materials. Depending on when and where the waste was generated at Rocky Flats, the waste packaging may vary. For wastes generated prior to 1975, packaging information is incomplete. Waste may be placed directly into prepared drums or double contained in plastic bags. Small amounts of portland cement were added to bottles to absorb any residual liquids. Oil-Dri may have been added to some drums. Drums were prepared according to pre and post-1972 procedures. Inspections were done and adsorbents (Oil-Dri or vermiculite) were added according to standard procedures. Some waste was also containerized in plywood boxes. Boxes were prepared according to pre and post-1972 procedures. Some of the waste containers are lead-lined.	Rocky Flats Plant	2	2	2	3
2	1	106	ID-RFO-338	338	INSULATION AND CHEMICAL WARFARE SERVICE	This waste stream, generated at the Rocky Flats Plant, consists of asbestos and fiberglass filter media, asbestos-type pipe insulation , and other materials such as aluminum and wood frames, and compacted insulation waste. Some of the waste may be damp. This code was replaced in 1977 with Content Code 376 (cemented insulation and filter media). There is a lack of information about the particulates on the filter media. Although there may be some organic material, it should be less than 14 lb/ft3 for drums and 6 lb/ft3 for boxes. Significant amounts of respirable fines may be present. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in the waste, except for some residual amounts of nitric acid. The waste is contained in drums and boxes. The waste is generally double-contained in either PE or PVC bags or in 1-gallon PE bottles and single or double bags. The bottles were individually assayed. Some pipe insulation may be wrapped with tape, depending on contamination levels, and placed directly into drums. Absorbent was added to some drums containing damp waste. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. Each box was surveyed to determine a calculated fissile content. Coated and uncoated boxes were prepared according to standard pre-1972 and 1972-1974 procedures.	Rocky Flats Plant	2	1	2	1
2	1	130	ID-RFO-339	339	LEADED RUBBER GLOVES AND APRONS	This waste comes from the Rocky Flats Plant and consists of leaded rubber gloves and aprons. A limited amount of unleaded gloves, lead bricks, and lead sheeting may also be present. Content Code 463 was replaced by Content Code 339 in 1973. Waste is packaged in standard RFP fashion. Lead linings are present on some drums.	Rocky Flats Plant	2	2	2	3
2	1	107	ID-RFO-360	360	INSULATION	This waste stream, generated at the Rocky Flats Plant, consists of asbestos-type pipe insulation, asbestos gloves and fireblankets, and asbestos and fiberglass prefilter and filter media. The waste may include limited amounts of other materials such as aluminum and wood frames and compacted insulation waste. Some materials may be damp. The waste may include limited amounts of combustible materials such as surgical gloves. This code has not been used since 1973. Since then absolute filters were processed as Content Codes 338 (insulation and CWS filter media) or 376 (cemented insulation and filter media). There is a lack of information about the particulate on the filter media. Significant amounts of respirable fines may be present, expecially since some of the waste has been reduced to an "oatmeal" consistency from handling. Some waste which was wet was dried in a clothes dryer prior to packaging. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in this waste, except for some residual amounts of nitric acid. The waste is contained in drums and one box. The waste is generally double-contained in either PE or PVC bags. The bottles were individually assayed. Some pipe insulation may be wrapped with tape, depending on contamination levels, and placed directly into drums. Absorbent was added to some drums containing damp waste. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. The box was surveyed to determine a calculated fissile content. The time when the box was used is not known. Coated and uncoated boxes were prepared according to standard pre-1972 and 1972-1974 procedures.	Rocky Flats Plant	2	1	2	1

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	94	ID-RFO-371	371	FIREBRICK	This waste contains whole and broken pieces of construction bricks, cinderblocks, and firebrick. Waste generated in the 1971 to 1973 period includes firebrick from the Pu recovery incinerator and related refractory development and from four boilers; cinderblocks and other brick from routine maintenance and from D&D following the Rocky Flats Plant fire. Waste generated since 1973 is mostly firebrick from Pu recovery operations. The firebrick generated since 1973 is a high-alumina, high-strength, class F brick manufactured by Plibrico (Plicast 40). Typical composition is Al203 =95.67%, SiO2 = 0.03%, Fe203 = 0.10%, TiO2 = 0.01%, CaO = 3.6%, MgO = 0.8%, and Alkalies = 0.28%. Some of the incinerator firebrick is "scarfed" to remove surface contamination and then leached with nitric acid to recover Pu. Waste is packaged in standard RFP drums and boxes. After 1973, mostly drums were used and the waste was placed in PVC bags which were then placed into Fibre-Paks. Two Fibre-Paks fit in a drum. The single drum of Content Code 377 waste was determined by visual examination to be Content Code 371.	Rocky Flats Plant	3	1	2	3
2	1	190	ID-RFO-374	374	BLACKTOP, CONCRETE, DIRT AND SAND	This waste contains blacktop, concrete, reinforced concrete, cinderblocks, bricks, dirt, and sand. Limited amounts of waste may be damp. A limited amount may contain combustibles such as coveralls and gloves. The waste is generated from cleanup of spills and leaks, process changes, maintenance, and D&D operations. Portland cement is added to containers that contain wet or damp waste. Waste is packaged in standard RFP fashion in drums and boxes. Sometimes the waste is bagged before being placed in the containers.	Rocky Flats Plant	3	1	2	3
2	1	95	ID-RFO-375	375	OIL-DRI RESIDUE FROM INCINERATOR	This waste stream, generated at Rocky Flats Plant, includes Oil-Dri absorbent and waste from laundry and utility operations. Organic content should be less than 14 lb/ft3. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. The material is contained in 55-gallon drums. Inside the drums, the waste may be contained in PE bottles and/or metal paint cans and double-bagged in PE and PVC bags. Some waste may also be contained in PE residue process containers (RPCS). Drums were prepared and inspected according to pre and post-1972 procedures. Starting in 1982, vermiculite instead of Oil-Dri was used in the tops of the drums. The waste matrix composition listed is for the incinerator waste. No information is available concerning the laundry and utility operation waste.	Rocky Flats Plant	3	1	2	2
2	1	108	ID-RFO-376	376	CEMENTED INSULATION FILTER MEDIA	This waste stream, generated at the Rocky Flats Plant, consists primarily of filter media from pre-filters, absolute filters, etc., and limited amounts of insulation waste such as asbestos gloves and fire blankets. Portland cement is added to neutralize any residual nitric acid and reduce the potential for drum pressurization. The waste has a potential for excessive fines. Although there may be some organic material, it should be less than 14 lb/ft3 for drums and 6 lb/ft3 for boxes. Significant amounts of respirable fines may be present. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in this waste, except for some residual amounts of nitric acid. The waste is contained in drums and boxes. Waste generated prior to 1979 is generally double-contained in either PE or PVC bags, 1-gallon PE bottles and/or metal paint cans. Most of this waste was repackaged into 15-gallon plastic bags after thorough mixing with portland cement. Drums were packed according to the usual post-1972 procedures. Each drum was assayed. Each box was surveyed to determine a calculated fissile content. Boxes were prepared according to standard post-1972 procedures.	Rocky Flats Plant	2	1	2	1
2	1	217	ID-RFO-430	430	UNLEACHED ION COLUMN RESIN	This waste, generated at the Rocky Flats Plant, consists of anionic and cationic exchange resins used in the purification and recovery of plutonium and americium, respectively. The anionic resins were DOWEX 1-X4 and the cationic resins were DOWEX 50W-X8, both being polystyrene-divinylbenzene copolymers.	Rocky Flats Plant	2	1	2	3
2	1	218	ID-RFO-431	431	LEACHED RESIN	This waste, generated at the Rocky Flats Plant, consists of anionic and cationic exchange resins used in the purification and recovery of plutonium and americium, respectively. It is believed that the resins were Content Code 430 resins that were processed by leaching to recover plutonium. Content code was used during 1972 only.	Rocky Flats Plant	2	1	2	3
2	1	219	ID-RFO-432	432	LEACHED AND CEMENTED RESIN	This waste, generated at the Rocky Flats Plant, consists of anion and cation exchange resins used in the purification and recovery of plutonium and americium, respectively. The resins are leached and cemented before disposal.	Rocky Flats Plant	3	2	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	121	ID-RFO-440	440	GLASS	This waste stream, generated at the Rocky Flats Plant, consists of glass sample vials, bottles, lead-taped sample vials, ion exchange columns, dissolver pots, laboratory glassware such as pyrex flasks and beakers, glovebox windows (glass, plexiglass, leaded glass), and crushed and ground glass. The waste includes limited amounts of other noncombustibles, such as metals, and limited amounts of combustible wastes. No sludges should be present although some glass vials may contain limited amounts of free liquids. No explosive, pyrophoric, or corrosive materials should be in the waste. The majority of drums do not contain respirable crushed glass fines or free liquids. Actual amounts of drums containing respirable crushed glass fines or free liquids have not been determined. The glass may be packaged with some variation depending on if it is whole, broken to pieces, or crushed or ground. Whole or broken glass may be packaged in 1-gallon PE bottles, in 13-inch high by 15.5-inch diameter Fibre-Paks (either loose or inside plastic bags inside the Fibre-Pak), or double -packed in plastic bags, with the outside of the outer bag taped for protection against sharp edges. Glassware such as sample vials may be taped together before packaging. Nonline generated glassware, light bulbs, and fluorescent tubes are usually crushed or ground and placed directly into a prepared 55-gallon drum. Drums were packed according to the usual pre-1972 and post-1972 procedures. Specific information on the box preparation was not available. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures; and, since 1982, vermiculite instead of Oil-Dri was placed on top of the outer sealed PE drum bag. A small number of the drums are lead-lined. Also, Oil-Dri was added to the glass waste if moisture was present.	Rocky Flats Plant	3	2	2	2
2	1	122	ID-RFO-441	441	UNLEACHED RASHIG RINGS	This waste stream, generated at the Rocky Flats Plant, consists of boronated glass rings used to minimize neutron multiplication in liquid storage tanks. Content Code 441, Unleached Rashig Rings, was used from 1971-79 as a separate stream and then combined with Content Code 442, Leached Rashig Rings. The rings are about 1.75 inch high and 1.5 inch in diameter, with a 0.25-inch wall thickness. The rings are heat and chemical resistant borosilicate glass with 11.8 - 13.8 weight % B_2O_3, with an isotopic content of 10B/11B of not less than 0.24. Some of the rings, which had above-discard amounts of plutonium, were leached with nitric acid to recover the plutonium and then rinsed with water, and dried. Some of the rings may be contaminated with small amounts of oil. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in the waste. Trace amounts of nitric acid or organic contaminants may be present. The rings are triple contained in PE or PVC and placed in a 10-inch high, 15.5-inch diameter Fibre-Pak. Two Fibre-Paks are placed inside a prepared 55-gallon drum according to the standard pre-1972 and post-1972 drum packing procedures. A few of the drums contain broken rashig rings in taped-closed, 4-liter PE bottles with double bags inside the bottles. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures; and, since 1982, vermiculite instead of Oil-Dri was placed on top of the outer sealed PE drum bag. A small number of the drums are lead-lined. Also, Oil-Dri was added to the glass waste if moisture was present.	Rocky Flats Plant	3	2	2	2
2	1	123	ID-RFO-442	442	LEACHED RASHIG RINGS	This waste stream, generated at the Rocky Flats Plant, consists of boronated glass rings used to minimize neutron multiplication in liquid storage tanks. Content Code 441, unleached rashig rings, was used from 1971-79 as a separate stream and then combined with Content Code 442, leached rashig rings. The rings are about 1.75 inch high and 1.5 inch in diameter, with a 0.25-inch wall thickness. The rings are heat and chemical resistant borosilicate glass with 11.8 - 13.8 weight % B_2O_3, with and isotopic content of 10B/11B of not less than 0.24. Some of the rings, which had above-discard amounts of plutonium, were leached with nitric acid to recover the plutonium and then rinsed with water and dried. Some of the rings may be contaminated with small amounts of oil. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in the waste. Trace amounts of nitric acid or organic contaminants may be present. The rings are triple contained in PE or PVC and placed in a 10-inch high, 15.5-inch diameter Fibre-Pak. Two Fibre-Paks are placed inside a prepared 55-gallon drum according to the standard pre-1972 and post-1972 drum packing procedures. A few of the drums contain broken rashig rings in taped-closed, 4-liter PE bottles with double bags inside the bottles. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures; and, since 1982, vermiculite instead of Oil-Dri was placed on top of the outer sealed PE drum bag. A small number of the drums are lead-lined. Also, Oil-Dri was added to the glass waste if moisture was present.	Rocky Flats Plant	3	2	2	2

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	131	ID-RFO-463	463	LEADED RUBBER GLOVES AND APRONS	This waste comes from the Rocky Flats Plant and consists of leaded rubber gloves and aprons. A limited amount of unleaded gloves, lead bricks, and lead sheeting may also be present. Content Code 463 was replaced by Content Code 339 in 1973. Waste is packaged in standard RFP fashion. Lead linings are present on some drums.	Rocky Flats Plant	2	2	2	3
2	1	52	ID-RFO-464	464	BENELEX AND PLEXIGLASS	This waste, generated at Rocky Flats Plant, consists of Benelex, which is used for neutron shielding, and Plexiglas glovebox windows. Lead sheeting (1/8 to 1/4 in. thick) may be attached to some benelex pieces. Benelex was usually coated with fire-retardant paint. In addition to Plexiglas, other types of glass such as leaded-glass may be present in the waste. The waste may include limited amounts of surgeons' gloves, metal hinges on Benelex gloveport doors, pieces of angle iron attached to larger pieces of Benelex, and rubber gaskets from glovebox windows. Content code 302 replaced content code 464 during 1973. The majority of waste drums will contain pieces of benelex (gloveport doors, etc.) generated from routine maintenance and renovation projects conducted primarily in 1972. Plexiglas and other types of glass may be found mixed in with the benelex and/or segregated and contained in a limited number of waste drums. Pieces of benelex waste were usually placed directly into prepared 55-gallon drums. Any contaminated Benelex was usually contained in plastic bags or wrapped in plastic sheeting. Plexiglas windows were usually contained in plastic before being placed in a prepared 55-gallon drum. Oil dri may have been added to the waste drums. The waste boxes were generated during 1973 and 1974 and are believed to contain larger pieces of benelex shielding on angle iron frames that were removed during final fire cleanup operations in building 776. It is believed that the benelex came from the south foundry line in building 776, which was not directly involved in the 1969 fire and was decontaminated and placed back in operation.	Rocky Flats Plant	2	1	2	3
2	1	144	ID-RFO-480	480	NONSPECIAL SOURCE METAL	The waste comes from the Rocky Flats Plant and consists of nonline-and line-generated wastes. The waste may be in the form of gloveboxes, glovebox windows, furnaces, lathes, drill presses, ducting, piping, angle iron, tanks, downdraft tables, part carriers, respirator filters, ultrasonic cleaners, control panels, electronic instrumentation , vacuum sweepers, pumps, motors, railing, stairs, metal racks and trays, hotplates, empty metal produce, and paint cans, carts, power tools (saws, drills, etc.), hand tools (wrenches, hammers, saws, chisels, gauges, etc.), chairs, desks, tables, typewriters, filing cabinets, crushed 55-gallon drums, etc. The waste may also include limited amounts of combustible wastes. The waste is packaged in standard RFP fashion. Sharp metal edges are taped before packaging. Some lead-lined containers are included.	Rocky Flats Plant	3	2	2	3
2	1	145	ID-RFO-481	481	LEACHED NONSPECIAL SOURCE METAL	This waste comes from the Rocky Flats Plant and consists of the smaller pieces of the waste described under Content Code 480 that have been washed with hot water to recover plutonium. The waste is packaged in standard RFP fashion. Sharp metal edges are taped before packaging. Some lead-lined containers are included.	Rocky Flats Plant	3	2	2	3
2	1	109	ID-RFO-490	490	CHEMICAL WARFARE SERVICE FILTERS	This waste stream, generated at the Rocky Flats Plant, consists primarily of whole HEPA filters, absolute filters, CWS (chemical warfare service) filters, and prefilters. The filter frames are usually wood, but a limited number are aluminum. The filter media is asbestos-type and fiberglass-type (nomex). There is a lack of information about the particulate on the filter media. Although there may be some organic material, it should be less than 14 lb/ft3 for drums and 6 lb/ft3 for boxes. Significant amounts of respirabl⌟ fines may be present. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in the waste, except for some residual amounts of nitric acid. The waste is contained in drums and boxes. Drums should be similar to Content Code 335 drums. Each filter was generally double-contained in either PE or PVC bags and then placed in prepared drums. Each drum was assayed. Drums of Content Code 490 waste have not been shipped to INEL since 1975. Boxes contain filters which are single or double-contained in plastic bags, along with their original cardboard shipping boxes. In boxes prepared after 1974, the boxes are flattened and the filters are crushed. About 12 uncrushed or 25-30 crushed HEPA filters will fit into a box. Portland cement and Oil-Dri were typically added to any containers which contained damp filters. Drums and boxes were prepared and packed according to the usual pre-1972 and post 1972 procedures. Each drum was assayed. Each box was surveyed using the cumulative assay value of the individual filters, determined from drum assays. One box which was shipped in 1972 is apparently mislabeled and is believed to contain metal waste.	Rocky Flats Plant	2	1	2	1

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	78	ID-RFO-900	900	LOW SPECIFIC ACTIVITY PLASTICS, PAPER, E	This waste stream is from the Rocky Flats Plant and primarily consists of nonline-generated combustible materials such as plastics, paper, empty PE bottles, booties, paper, plastic sheeting, and surgical gloves. The waste may be dry or damp. Limited amounts of noncombustibles may also be present. The waste stream is the same as Content Code 330 and has not been used since 1974 except for 3 barrels of U-238 contaminated wastes added in 1975. The waste stream is not discussed together with Content Code 330 because of some different descriptive information in the data base. The waste is mostly low specific activity (LSA, <100 nci/g) . The average waste organic material content usually exceeds 14 lb/ft3 for drums and 6 lb/ft3 for boxes. There should be no sludges, free liquids, explosives, compressed gases, pyrophoric, toxic, or corrosive materials. Depending on when and where the waste was generated at Rocky Flats, the waste packaging may vary. Most wastes were placed directly into prepared 55-gallon drums or boxes. Up to 15 lb of portland cement was added where necessary to absorb small amounts of free liquids in containers. Drums and boxes were prepared according to pre and post-1972 procedures. Inspections were done and adsorbents (Oil-Dri and vermiculite) were added according to standard procedures. All drums are assayed. The fissile content of boxes is determined by surveying the contents and calculating the quantity of fissile material.	Rocky Flats Plant	1	1	2	3
2	1	161	ID-RFO-950	950	LOW SPECIFIC ACTIVITY METAL, GLASS, ETC.	This waste stream, generated at Rocky Flats Plant, contains primarily nonline generated noncombustible wastes from maintenance and renovation. Items in this waste include electrical conduit, water and steam pipes, tools, control panels, electronic instrumentation, light bulbs, windows, office equipment (typewriters, chairs, desks, filing cabinets, etc.), lead shielding, and structural metal. Limited amounts of combustible wastes such as paper, rags, etc. are also included. Most of this waste is contaminated with less that 100 nci/g TRU. The organic content is less than 14 lb/ft3 for drums and less than 6 lb/ft3 for boxes. Fines should not be present in excessive amounts. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. This waste stream is packaged in drums and in boxes. Depending on size and contamination levels of individual items, the waste is single or double contained in plastics or placed directly into prepared waste drums or boxes. Drums and boxes were prepared according to standard pre and post-1972 procedures. Oil-Dri absorbent is added to many of the containers. Each drum is assayed. Boxes are surveyed for the calculation of fissile contents.	Rocky Flats Plant	2	1	2	3
2	1	79	ID-RFO-970	970	WOOD	This waste stream is from the Rocky Flats Plant and primarily consists of wood in the form of lumber, plywood, filter frames, and possibly ladders. Somer other items such as plastic sheeting, Kimwipes, and other combustibles are also present. Plastic sheeting may have some paint coatings. Limited noncombustibles such as nails and sheetrock may also be included. Content Code 970 has not been used since 1978; it is similar to Content Code 330. The average waste organic material content usually exceeds 6 lb/ft3 for boxes and 14 lb/ft3 for drums. Limited sawdust fines are expected. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Depending on when and where the waste was generated at Rocky Flats, the waste packaging may vary. Most wastes were placed directly into prepared boxes. Wastes such as filter frames were flattened, double-bagged, and placed in prepared 55-gallon drums. Drums and boxes were prepared according to pre-and post-1972 procedures. Inspections were done and adsorbents (Oil-Dri and vermiculite) were added according to standard procedures. All drums are assayed. The fissile content of boxes is determined by surveying the contents and calculating the quantity of fissile material.	Rocky Flats Plant	1	1	2	3
2	1	61	ID-RFO-976	976	BLDG 776 PROCESS SLUDGE	This waste is from Rocky Flats. The waste consists of sludge from floor drains in a Pu process facility that have been cemented in portland. The cement is described as a poor grade. Also, may be laundry sludges, material contents given are for an organic laundry sludge.	Rocky Flats Plant	3	1	2	2
2	1	62	ID-RFO-978	978	LAUNDRY SLUDGE	This waste is from Rocky Flats. The waste consists of sludge from laundry operations that have been cemented in portland. The cement is described as a poor grade.	Rocky Flats Plant	3	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
2	1	193	ID-RFO-990	990	DIRT	This waste stream, generated at the Rocky Flats Plant, contains dry dirt and soil generated from cleanup of spills, leaks, etc. It may also include evaporator pond sludge. A limited amount of the waste may be damp. A limited amount may contain combustibles such as coveralls and gloves. Dirt is packaged in standard RFP drums. Sometimes the dirt is bagged before being placed in the drum. Information given is the same as IDC 090.	Rocky Flats Plant	3	1	2	3
2	1	294	ID-RFO-9999	9999	PRE-73 DRUMS	This is not an official Item Description Code (IDC). It was created to represent IDC zero (0) wastes which were generated prior to 1973, but were not adequately tracked to presently identify specific waste streams. As the mission of Rocky Flats changed very little during the years of operation, it is expected that waste streams generated after 1973 are similar to the pre-1973 waste streams.	Mostly Rocky Flats Plant	2	2	2	3
2	1	240	ID-TAN-162	*	TAN DECON SOLVENT WASTES	Decontamination and decommissioning of a decontamination facility. Waste stream generated in four dip tanks that drained into a common sump. [Note high alpha-activity on containers in storage.]	Idaho National Engineering Laboratory	3	1	2	2
2	1	241	ID-TAN-163	*	TAN DECON HEAVY METAL SOLIDS AND DEBRIS	This waste stream is dry solids (appears as sand) water rinsed from contaminated materials. The waste is from decontamination and decommissioning of a decontamination facility. High alpha content.	Idaho National Engineering Laboratory	3	1	2	2
2	1	779	LB-W011	*	ACIDIC AQUEOUS SOLUTIONS/SOLIDS w/METALS	Blocks and sheets of lead contaminated with radioactive isotopes. Material used as shielding at accelerators or near radioactive sources. No storage information (volume, mass) is available for this waste stream as of this report date.	LBL		1	2	2
2	1	774	LB-W012	*	BASIC SOLIDS w/METALS - HIGH ALPHA	Lab packed solutions and solids with metals and radionuclides. Alpha contamination greater than 10 nCi/g but less than or equal to 100 nCi/g. No storage information (volume, mass) is available for this waste stream as of this report date.	LBL	1	1	2	2
2	1	780	LB-W014	*	LIQUIDS/SOLIDS CONTAINING SOLVENTS & OIL	Labpacks with contaminated acid solutions, bases, oils, solvents, cyanides, asbestos, or PCBs. Some contaminants are non-RCRA. The waste in this stream have not undergone sufficient initial characterization to enable assignment to one of the other LBL streams. As characterization continues, the waste in this stream will be assigned to another LBL stream. No storage information (volume, mass) is available for this waste stream as of this report date.	LBL		1	3	3
2	1	781	LB-W017	*	ORGANIC SCINTILLATION FLUIDS	No storage information (volume, mass) is available for this waste stream as of this report date.			1		
2	1	782	LB-W018	*	AQUEOUS/SOLID OXIDIZERS	No storage information (volume, mass) is available for this waste stream as of this report date.			1		
2	1	783	LB-W019	*	DEBRIS CONTAMINATED w/ ORGANIC VOLATILES	No storage information (volume, mass) is available for this waste stream as of this report date.			1		

End of waste category 2 mixed waste 1

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
Mixed Waste = 2											
2	2	764	CH-ANL-RDA	*	ANLW ALPHA LOW LEVEL WASTE	Alpha Low-level radioactive waste being stored at ANL-W storage facilities.			1		
2	2	207	ID-INL-153N	153	COMBUSTIBLE LAB WASTE	This waste stream was generated at the Argonne National Laboratory-West at the INEL. Most of the waste is organic and combustible materials including paper, wood, PVC and plastic containers and items, rubber gaskets and gloves, leather, rags, towels, Q-tips, tubing, filter media, abrasive media, and metal pieces. Small residuals of moderators and fuel are trapped on the filters. One of the 28 total drums of content code 153 waste is stored at the Transuranic Storage Area (TSA) for contact-handled waste. The other 27 drums are stored at the Intermediate Level Transuranic Storage Facility (ILTSF) for remote handled waste. The organic content may exceed 14 lb/ft3. Combustibles, including packaging, may exceed 25 volume percent. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Individual waste items may be loose or plastic bagged. Combustibles and noncombustibles are segregated to separate waste cans. Each can is weighed and assayed. The inner waste cans are loaded into an outer waste drum, along with a lead shield plug. Assays are done for each can and for the drums. Waste stream is non-mixed, because lead is used for shielding only and not considered a part of the waste stream.	Idaho National engineering Laboratory	1	2	2	3
2	2	162	ID-MDO-825N	825	NONCOMBUSTIBLE EQUIPMENT DRUMS	This waste stream, generated at Mound Laboratory, is similar to content code 824 except that the waste items are smaller and can fit inside drums. The stream consists of noncombustible wastes such as small tanks, piping, small valves, tools, hot plates, presses, grinders, metallurgical polishers, ringstands, concrete, floor tile, sheet metal, electric motors, pumps, metallurgical presses, dissolvers, ladders, vacuum sweeper filters, sweeper hose, and glass. Limited amounts of combustible wastes such as plastic tanks are also included. The organic content is less than 14 lb/ft3. Respirable fines should be within limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Some emptied cylinders and fire extinguishers with opened valves are included in the waste. The waste stream is packaged in drums except for one standard sized box, which should be correctly labeled content code 824. Some items are wiped down prior to packaging. Each item is generally single or double contained in plastic. Florco absorbent is added to the bottom of each drum. Plywood spacers are added between the drum liner and the drum lid. Each barrel is assayed.	Mound Laboratory	2	1	2	3
2	2	36	ID-RFO-095N	95	SLUDGE	This waste stream, generated at the Rocky Flats Plant, is sewage sludge from cleaning stabilization ponds. The sludge may be moist or dry, and may consist of fines, chunks or pieces of dried cake. Shipment of sewer sludge to the INEL stopped in 1976. The waste contains high levels of fines. In addition the drums may contain free liquids. The sewage sludge should contain less than 10 nCi/g TRU elements. Organic content in the sludge is not known. No free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in the waste. Sewer sludge was placed directly into prepared 55-gallon drums until 1974. Drums were prepared according to pre and post-1972 procedures. Portland cement was added to the bottom and top of the inner bag. If the sludge was moist, portland cement was also added in layers with the sludge. Since 1974, packaging was changed to 4 x 4 x 7 ft fiberglass-reinforced polyester (FRP) coated plywood boxes due to the pressure buildup in the drums. Each box was lined with a PE bag and a cardboard liner. About 90 lb of portland cement was added to the bottom and top of each box. Fissile content of the sewage was determined by radiochemical analysis of sludge samples.	Rocky Flats Plant	3	1	2	2
2	2	173	ID-RFO-115N	115	GRAPHITE WASTE	Graphite waste consists of discarded graphite molds, laboratory equipment and furnace equipment (whole pieces) from plutonium casting of laboratory operations. The content codes certifiably packaged and included in 115 are 300, 302, and 312.	Rocky Flats Plant	3	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	2	174	ID-RFO-310N	310	GRAPHITE SCARFINGS	This waste stream was generated at the Rocky Flats Plant. Graphite scarfings are the pieces of graphite waste generated from scarfing or scraping graphite molds to remove adhered plutonium. The scarfings were not leached with nitric acid to recover plutonium, because the plutonium content was not at above-discard levels. Scarfings which had above-discard plutonium levels were leached and then identified as content code 311. This waste contains excessive fines. This waste is almost entirely carbon powder and granules. The waste should be inert in storage, but it is essentially 100% combustible. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Scarfings are collected into 1-gallon PE bottles. Each bottle is sealed inside PVC and PE bags, and then assayed. About 15-20 bottles will fit into a drum. Drums were packed according to the usual pre-1972 and post 1972 procedures. Since 1972, the drums were also processed according to inspection and sealing procedures, and, since 1982, vermiculite instead of Oil-dri was placed on top of the outer sealed PE drum bag.	Rocky Flats Plant	3	1	2	3
2	2	175	ID-RFO-370N	370	CRUCIBLE, LECO	This waste stream includes blank Leco crucibles and caps used for sample analysis. The crucibles are 1 inch high by 1 inch diameter, made of fired silica based ceramic. The crucibles were used to calibrate the Leco anlayzer, and contain fused amounts of accelerating metals (iron, tin, copper, titanium, stainless steel, etc.) used for blank calibration. The crucibles should be unbroken except for those generated prior to 1975, which were broken before packaging. When broken, there should be minimal respirable or dispersable fines . The waste stream handling and packaging is as follows: blank crucibles and caps were placed into 1-gallon metal paint cans, about 150-200 per can. The can lid was placed and sealed with tape. each paint can was double-bagged out the glovebox in PVC or PE-PVC bags and placed in prepared 55-gallon drums, about 20-25 cans per drum. Prior to 1972, 90-mil sealed rigid liners were used in addition to the two PE bags. Since 1972, drums were inspected (and corrected where needed) for free liquids, proper packaging, and proper content code. One to two quarts of Oil-dri was placed on the outer sealed PE drum bag. Starting in February 1982, 3-12 lb of vermiculite was used to fill the space between the outer drum bag and the rigid liner.	Rocky Flats Plant	3	1	2	3
2	2	189	ID-RFO-372N	372	GRIT	This waste stream, generated at the Rocky Flats Plant, consists of grit such as aluminum oxide and iron fines and pellets used in grit-blasting operations and spent silica gel desiccant. The waste has the potential of excessive fines. The only organic material is the packaging, which averages about 5 lb/ft3, excluding the drum liner. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. The material is contained in 55-gallon drums. Inside the drums, the grit may be contained in PVC or PE bags in Vollrath stainless steel cans or in 1-gallon PE bottles inside PVC and PE bags. Silica gel is placed directly into the prepared drums. Drums were prepared and inspected according to pre- and post-1972 procedures.	Rocky Flats Plant	3	1	2	3
2	2	194	ID-RFO-425N	425	FLUID BED ASH	This waste , generated at the Rocky Flats Plant,consists of ash generatd from the experimental pilot and demonstration fluid bed incinerator plants. Combustibles used for experiments were contaminated with low levels of Pu. Ash is packaged in standard RFP drums. Drums were assayed and fissile quantities calculated.	Rocky Flats Plant	3	1	2	2
2	2	96	ID-RFO-960N	960	CONCRETE, ASPHALT, ETC.	This waste, generated at the Rocky Flats Plant, is primarily concrete and asphalt with limited amounts of dirt and combustibles. The code was replaced by 374 in 1973. Content code 374 is considered under the soils, asphalt, and sands waste stream. The major source for this waste is concrete from removal of six reinforced-concrete aqueous treatment tanks. Other sources include concrete from cutouts for doorways, and asphalt from a spill. Information about the waste is not complete. The waste is packaged in standard RFP drums and boxes.	Rocky Flats Plant	3	1	2	3

Table 1. INEL alpha low level mixed and non-mixed waste identification and description information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
2	2	37	ID-RFO-995N	995	SLUDGE	This waste stream, generated at the Rocky Flats Plant, is sewage sludge from cleaning stabilization ponds. This waste also contains a limited number of drums containing sludge generated by plutonium recovery operations. The sludge may be moist or dry, and may consist of fines, chunks or pieces of dried cake. Shipment of sewer sludge to the INEL stopped in 1976. The waste contains high levels of fines. The drums contain free liquids. The sewage sludge should contain less than 10 nCi/g TRU elements. Organic content in the sludge is not known. No free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in the waste. Sewer sludge was placed directly into prepared 55-gallon drums until 1974. Drums were prepared according to pre and post-1972 procedures. Portland cement was added to the bottom and top of the inner bag. If the sludge was moist, portland cement was also added in layers with the sludge. Since 1974, packaging was changed to 4 x 4 x 7 ft fiberglass-reinforced polyester (FRP) coated plywood boxes due to the pressure buildup in the drums. Each box was lined with a PE bag and a cardboard liner. About 90 lb of portland cement was added to the bottom and top of each box. Fissile content of the sewage was determined by radiochemical analysis of sludge samples.	Rocky Flats Plant	3	1	2	2
2	2	208	ID-TRA-154N	154	SAMPLE FUEL	This waste stream was generated at the INEL. These wastes include actinide neutron sources, a radium needle, small vials of fuel, and metal containers of experimental fuel capsules. The organic content is less than 14 lb/ft3. Combustibles, including packaging, may exceed 25 volume percent. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. These wastes are packaged three different ways, depending on when the packaging was done. Pu-Be sources packaged in 1975 were placed in a carbon steel pipe, which was cemented and encapsulated into the center of a 55-gallon drum. In 1978, Pu-Be sources were packaged in four 55-gallon drums. Wastes packed in 1980 were wrapped plastic, placed in paraffin lined 15-gallon drums, and then placed in 55-gallon drums.		2	2	2	
End of waste category	2 mixed waste	2									

Table 2. INEL alpha low level mixed and non-mixed waste storage information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Container Type	Form L=Liquid	Number of Containers	Volume (m3)	Drum Equivalents (1DE=0.212m3)	Mass (kg)
Mixed waste = 1										
2	1	155	ID-AEO-100	100	BIN		106	371.00	1,750.00	85,800.00
						subtotal	106	371.00	1,750.00	85,800.00
2	1	156	ID-AEO-101	101	BIN		11	38.50	181.60	10,440.00
						subtotal	11	38.50	181.60	10,440.00
2	1	297	ID-AEO-102	102	DRUM		47	9.96	47.00	5,000.00
2	1	297	ID-AEO-102	102	BIN		1	3.50	16.51	1,300.00
						subtotal	48	13.46	63.51	6,300.00
2	1	206	ID-AEO-104	104	DRUM		209	44.31	209.00	9,900.00
2	1	206	ID-AEO-104	104	BIN		1	3.50	16.51	1,100.00
						subtotal	210	47.81	225.51	11,000.00
2	1	300	ID-ANL-161	161	DRUM		2	0.42	2.00	140.00
						subtotal	2	0.42	2.00	140.00
2	1	158	ID-BCO-201	201	BIN		23	80.50	379.72	26,100.00
						subtotal	23	80.50	379.72	26,100.00
2	1	301	ID-BCO-202	202	BIN		4	14.00	66.04	2,760.00
						subtotal	4	14.00	66.04	2,760.00
2	1	302	ID-BCO-203	203	BIN		6	21.00	99.06	4,400.00
						subtotal	6	21.00	99.06	4,400.00
2	1	303	ID-BCO-204	204	DRUM		3	0.64	3.00	729.00
						subtotal	3	0.64	3.00	729.00
2	1	72	ID-BTO-010	10	DRUM		159	33.71	159.00	13,900.00
						subtotal	159	33.71	159.00	13,900.00
2	1	142	ID-BTO-020	20	DRUM		294	62.33	294.00	31,500.00
						subtotal	294	62.33	294.00	31,500.00
2	1	34	ID-BTO-030	30	INSERT		2	0.42	2.00	560.00
						subtotal	2	0.42	2.00	560.00
2	1	299	ID-CPP-156	156	BOX		9	28.53	134.58	11,000.00
						subtotal	9	28.53	134.58	11,000.00
2	1	188	ID-INL-150	150	DRUM		15	3.18	15.00	1,000.00
2	1	188	ID-INL-150	150	INSERT		2	0.42	2.00	210.00
						subtotal	17	3.60	17.00	1,210.00
2	1	298	ID-INL-155	155	BOX		1	3.17	14.95	68.00
2	1	298	ID-INL-155	155	DRUM		6	1.27	6.00	760.00
						subtotal	7	4.44	20.95	828.00
2	1	146	ID-MDO-803	803	DRUM		13	2.76	13.00	970.00
						subtotal	13	2.76	13.00	970.00
2	1	160	ID-MDO-824	824	BOX		264	836.88	3,947.55	265,000.00
						subtotal	264	836.88	3,947.55	265,000.00
2	1	77	ID-MDO-826	826	DRUM		2	0.42	2.00	240.00
2	1	77	ID-MDO-826	826	BOX		3	9.51	44.86	3,000.00
						subtotal	5	9.93	46.86	3,240.00
2	1	58	ID-MDO-834	834	DRUM		188	39.86	188.00	35,500.00
						subtotal	188	39.86	188.00	35,500.00
2	1	59	ID-MDO-835	835	DRUM		844	178.93	844.00	146,000.00
						subtotal	844	178.93	844.00	146,000.00
2	1	60	ID-MDO-836	836	DRUM		4,152	880.22	4,152.00	1,190,000.00
						subtotal	4,152	880.22	4,152.00	1,190,000.00
2	1	304	ID-MDO-838	838	DRUM		1	0.21	1.00	150.00
						subtotal	1	0.21	1.00	150.00
2	1	191	ID-MDO-842	842	BOX		27	85.59	403.73	56,080.00
						subtotal	27	85.59	403.73	56,080.00
2	1	305	ID-MDO-847	847	DRUM		721	152.85	721.00	84,700.00
						subtotal	721	152.85	721.00	84,700.00
2	1	306	ID-MDO-848	848	DRUM		128	27.14	128.00	12,420.00
						subtotal	128	27.14	128.00	12,420.00
2	1	29	ID-OFS-111	111	DRUM		1,316	278.99	1,316.00	290,000.00
2	1	29	ID-OFS-111	111	BOX		2	6.34	29.91	1,600.00
						subtotal	1,318	285.33	1,345.91	291,600.00
2	1	157	ID-OFS-121	121	DRUM		1	0.21	1.00	44.00
						subtotal	1	0.21	1.00	44.00
2	1	293	ID-RFO-000	0	DRUM		645	136.74	645.00	60,000.00
						subtotal	645	136.74	645.00	60,000.00
2	1	28	ID-RFO-001	1	DRUM		262	55.54	262.00	56,000.00
2	1	28	ID-RFO-001	1	INSERT		1	0.21	1.00	210.00
2	1	28	ID-RFO-001	1	BOX		1	3.17	14.95	1,600.00
						subtotal	264	58.93	277.95	57,810.00
2	1	31	ID-RFO-002	2	DRUM		1,615	342.38	1,615.00	410,000.00
						subtotal	1,615	342.38	1,615.00	410,000.00
2	1	235	ID-RFO-003	3	BOX		6	19.02	89.72	9,100.00
2	1	235	ID-RFO-003	3	DRUM		4,636	982.83	4,636.00	1,000,000.00
						subtotal	4,642	1,001.85	4,725.72	1,009,100.00

Table 2. INEL alpha low level mixed and non-mixed waste storage information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Container Type	Form L=Liquid	Number of Containers	Volume (m3)	Drum Equivalents (1DE=0.212m3)	Mass (kg)
2	1	57	ID-RFO-004	4	DRUM		490	103.88	490.00	130,000.00
						subtotal	490	103.88	490.00	130,000.00
2	1	223	ID-RFO-005	5	BOX		1	3.17	14.95	1,840.00
2	1	223	ID-RFO-005	5	DRUM		49	10.39	49.00	9,010.00
						subtotal	50	13.56	63.95	10,850.00
2	1	35	ID-RFO-007	7	DRUM		2,190	464.28	2,190.00	480,000.00
						subtotal	2,190	464.28	2,190.00	480,000.00
2	1	192	ID-RFO-090	90	DRUM		135	28.62	135.00	38,000.00
						subtotal	135	28.62	135.00	38,000.00
2	1	55	ID-RFO-112	112	DRUM		24	5.09	24.00	4,300.00
						subtotal	24	5.09	24.00	4,300.00
2	1	30	ID-RFO-113	113	DRUM		12	2.54	12.00	3,600.00
						subtotal	12	2.54	12.00	3,600.00
2	1	56	ID-RFO-114	114	DRUM		19	4.03	19.00	3,100.00
						subtotal	19	4.03	19.00	3,100.00
2	1	73	ID-RFO-116	116	BOX		117	370.89	1,749.48	89,550.00
2	1	73	ID-RFO-116	116	DRUM		1	0.21	1.00	78.00
						subtotal	118	371.10	1,750.48	89,628.00
2	1	141	ID-RFO-117	117	BOX		44	139.48	657.92	58,000.00
2	1	141	ID-RFO-117	117	DRUM		38	8.06	38.00	4,300.00
						subtotal	82	147.54	695.92	62,300.00
2	1	120	ID-RFO-118	118	BOX		1	3.17	14.95	1,800.00
2	1	120	ID-RFO-118	118	DRUM		15	3.18	15.00	1,800.00
						subtotal	16	6.35	29.95	3,600.00
2	1	102	ID-RFO-119	119	DRUM		87	18.44	87.00	5,700.00
2	1	102	ID-RFO-119	119	BOX		16	50.72	239.25	11,000.00
						subtotal	103	69.16	326.25	16,700.00
2	1	93	ID-RFO-122	122	DRUM		58	12.30	58.00	9,300.00
						subtotal	58	12.30	58.00	9,300.00
2	1	129	ID-RFO-123	123	DRUM		11	2.33	11.00	1,200.00
						subtotal	11	2.33	11.00	1,200.00
2	1	159	ID-RFO-241	241	DRUM		114	24.17	114.00	19,000.00
						subtotal	114	24.17	114.00	19,000.00
2	1	32	ID-RFO-290	290	DRUM		1	0.21	1.00	127.00
						subtotal	1	0.21	1.00	127.00
2	1	33	ID-RFO-292	292	DRUM		23	4.88	23.00	2,914.00
						subtotal	23	4.88	23.00	2,914.00
2	1	171	ID-RFO-300	300	DRUM		87	18.44	87.00	9,600.00
						subtotal	87	18.44	87.00	9,600.00
2	1	172	ID-RFO-301	301	DRUM		6	1.27	6.00	630.00
						subtotal	6	1.27	6.00	630.00
2	1	51	ID-RFO-302	302	BOX		17	53.89	254.20	29,900.00
2	1	51	ID-RFO-302	302	DRUM		7	1.48	7.00	840.00
						subtotal	24	55.37	261.20	30,740.00
2	1	143	ID-RFO-320	320	DRUM		135	28.62	135.00	17,000.00
						subtotal	135	28.62	135.00	17,000.00
2	1	104	ID-RFO-328	328	DRUM		1	0.21	1.00	78.00
						subtotal	1	0.21	1.00	78.00
2	1	74	ID-RFO-330	330	DRUM		4,230	896.76	4,230.00	340,000.00
2	1	74	ID-RFO-330	330	BOX		711	2,253.87	10,631.46	610,000.00
						subtotal	4,941	3,150.63	14,861.46	950,000.00
2	1	105	ID-RFO-335	335	DRUM		78	16.54	78.00	5,500.00
						subtotal	78	16.54	78.00	5,500.00
2	1	75	ID-RFO-336	336	DRUM		6,522	1,382.66	6,522.00	580,000.00
2	1	75	ID-RFO-336	336	BOX		22	69.74	328.96	18,000.00
						subtotal	6,544	1,452.40	6,850.96	598,000.00
2	1	76	ID-RFO-337	337	DRUM		1,605	340.26	1,605.00	120,000.00
2	1	76	ID-RFO-337	337	BOX		4	12.68	59.81	3,800.00
						subtotal	1,609	352.94	1,664.81	123,800.00
2	1	106	ID-RFO-338	338	BOX		73	231.41	1,091.56	65,300.00
2	1	106	ID-RFO-338	338	DRUM		44	9.33	44.00	3,400.00
						subtotal	117	240.74	1,135.56	68,700.00
2	1	130	ID-RFO-339	339	DRUM		23	4.88	23.00	3,400.00
						subtotal	23	4.88	23.00	3,400.00
2	1	107	ID-RFO-360	360	BOX		1	3.17	14.95	840.00
2	1	107	ID-RFO-360	360	DRUM		223	47.28	223.00	14,460.00
						subtotal	224	50.45	237.95	15,300.00
2	1	94	ID-RFO-371	371	DRUM		701	148.61	701.00	120,000.00
2	1	94	ID-RFO-371	371	BOX		11	34.87	164.48	11,000.00
						subtotal	712	183.48	865.48	131,000.00
2	1	190	ID-RFO-374	374	DRUM		1,108	234.90	1,108.00	200,000.00
2	1	190	ID-RFO-374	374	BOX		42	133.14	628.02	63,000.00
						subtotal	1,150	368.04	1,736.02	263,000.00

Table 2. INEL alpha low level mixed and non-mixed waste storage information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Container Type	Form L=Liquid	Number of Containers	Volume (m3)	Drum Equivalents (1DE=0.212m3)	Mass (kg)
2	1	95	ID-RFO-375	375	DRUM		15	3.18	15.00	2,100.00
						subtotal	15	3.18	15.00	2,100.00
2	1	108	ID-RFO-376	376	DRUM		417	88.40	417.00	32,000.00
2	1	108	ID-RFO-376	376	BOX		2	6.34	29.91	3,900.00
						subtotal	419	94.74	446.91	35,900.00
2	1	217	ID-RFO-430	430	DRUM		9	1.91	9.00	1,610.00
						subtotal	9	1.91	9.00	1,610.00
2	1	218	ID-RFO-431	431	DRUM		2	0.42	2.00	366.00
						subtotal	2	0.42	2.00	366.00
2	1	219	ID-RFO-432	432	DRUM		42	8.90	42.00	5,700.00
						subtotal	42	8.90	42.00	5,700.00
2	1	121	ID-RFO-440	440	DRUM		450	95.40	450.00	48,000.00
						subtotal	450	95.40	450.00	48,000.00
2	1	122	ID-RFO-441	441	DRUM		777	164.72	777.00	67,000.00
						subtotal	777	164.72	777.00	67,000.00
2	1	123	ID-RFO-442	442	DRUM		653	138.44	653.00	55,000.00
						subtotal	653	138.44	653.00	55,000.00
2	1	131	ID-RFO-463	463	DRUM		5	1.06	5.00	470.00
						subtotal	5	1.06	5.00	470.00
2	1	52	ID-RFO-464	464	DRUM		18	3.82	18.00	2,400.00
						subtotal	18	3.82	18.00	2,400.00
2	1	144	ID-RFO-480	480	BOX		2,007	6,362.19	30,010.33	2,402,000.00
2	1	144	ID-RFO-480	480	DRUM		1,537	325.84	1,537.00	170,000.00
						subtotal	3,544	6,688.03	31,547.33	2,572,000.00
2	1	145	ID-RFO-481	481	BOX		39	123.63	583.16	47,000.00
2	1	145	ID-RFO-481	481	DRUM		192	40.70	192.00	24,000.00
						subtotal	231	164.33	775.16	71,000.00
2	1	109	ID-RFO-490	490	DRUM		8	1.70	8.00	680.00
2	1	109	ID-RFO-490	490	BOX		275	871.75	4,112.03	230,000.00
						subtotal	283	873.45	4,120.03	230,680.00
2	1	78	ID-RFO-900	900	DRUM		346	73.35	346.00	31,611.00
2	1	78	ID-RFO-900	900	BOX		6	19.02	89.72	5,182.00
						subtotal	352	92.37	435.72	36,793.00
2	1	161	ID-RFO-950	950	BOX		329	1,042.93	4,919.48	397,940.00
2	1	161	ID-RFO-950	950	DRUM		104	22.05	104.00	10,610.00
						subtotal	433	1,064.98	5,023.48	408,550.00
2	1	79	ID-RFO-970	970	BOX		28	88.76	418.68	26,600.00
2	1	79	ID-RFO-970	970	DRUM		12	2.54	12.00	1,200.00
						subtotal	40	91.30	430.68	27,800.00
2	1	61	ID-RFO-976	976	DRUM		2	0.42	2.00	400.00
2	1	61	ID-RFO-976	976	BOX		20	63.40	299.06	41,000.00
						subtotal	22	63.82	301.06	41,400.00
2	1	62	ID-RFO-978	978	BOX		8	25.36	119.62	13,100.00
						subtotal	8	25.36	119.62	13,100.00
2	1	193	ID-RFO-990	990	DRUM		470	99.64	470.00	120,000.00
						subtotal	470	99.64	470.00	120,000.00
2	1	294	ID-RFO-9999	9999	DRUM		14,188	3,007.86	14,188.00	1,471,348.00
						subtotal	14,188	3,007.86	14,188.00	1,471,348.00

Table 2. INEL alpha low level mixed and non-mixed waste storage information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Container Type	Form L=Liquid	Number of Containers	Volume (m3)	Drum Equivalents (1DE=0.212m3)	Mass (kg)
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	199.58
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.11	0.54	53.52
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.32	1.52	335.66
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	195.04
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.32	1.52	235.87
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	199.58
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	199.58
2	1	240	ID-TAN-162	*	DM	L		0.32	1.52	376.48
2	1	240	ID-TAN-162	*	DM	L		0.11	0.54	40.82
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	90.72
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	172.37
2	1	240	ID-TAN-162	*	DM	L		0.32	1.52	403.70
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	195.04
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	197.31
2	1	240	ID-TAN-162	*	DM	L		0.21	0.98	201.85
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	185.97
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	299.37
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	263.08
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	244.94
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	263.08
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	317.51
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	240.40
2	1	240	ID-TAN-162	*	DM	S		0.21	0.98	235.87
						subtotal		7.14	33.66	7,120.49
2	1	241	ID-TAN-163	*	DM	S		0.32	1.52	263.08
						subtotal		0.32	1.52	263.08
			Mixed waste = 1	(1=mixed 2= non-mixed	**subtotal:**		56,787	24,635.42	116,204.83	12,139,248.58
Mixed waste = 2										
2	2	764	CH-ANL-RDA	*	CM	S		0.10	0.47	204.57
2	2	764	CH-ANL-RDA	*	CM	S		0.10	0.47	117.93
						subtotal		0.20	0.94	322.50
2	2	207	ID-INL-153N	153	DRUM		28	5.94	28.00	1,493.00
						subtotal	28	5.94	28.00	1,493.00
2	2	162	ID-MDO-825N	825	DRUM		46	9.75	46.00	4,100.00
2	2	162	ID-MDO-825N	825	BOX		2	6.34	29.91	1,800.00
						subtotal	48	16.09	75.91	5,900.00
2	2	36	ID-RFO-095N	95	DRUM		23	4.88	23.00	4,000.00
						subtotal	23	4.88	23.00	4,000.00
2	2	173	ID-RFO-115N	115	DRUM		5	1.06	5.00	410.00
						subtotal	5	1.06	5.00	410.00
2	2	174	ID-RFO-310N	310	DRUM		1	0.21	1.00	100.00
						subtotal	1	0.21	1.00	100.00
2	2	175	ID-RFO-370N	370	DRUM		23	4.88	23.00	3,680.00
						subtotal	23	4.88	23.00	3,680.00
2	2	189	ID-RFO-372N	372	DRUM		4	0.85	4.00	500.00
						subtotal	4	0.85	4.00	500.00
2	2	194	ID-RFO-425N	425	DRUM		6	1.27	6.00	1,050.00
						subtotal	6	1.27	6.00	1,050.00
2	2	96	ID-RFO-960N	960	DRUM		657	139.28	657.00	130,000.00
2	2	96	ID-RFO-960N	960	BOX		171	542.07	2,556.93	321,900.00
						subtotal	828	681.35	3,213.93	451,900.00
2	2	37	ID-RFO-995N	995	BOX		8	25.36	119.62	15,900.00
2	2	37	ID-RFO-995N	995	DRUM		205	43.46	205.00	44,500.00
						subtotal	213	68.82	324.62	60,400.00
2	2	208	ID-TRA-154N	154	DRUM		1	0.21	1.00	210.00
						subtotal	1	0.21	1.00	210.00
			Mixed waste = 2	(1=mixed 2= non-mixed	**subtotal:**		1,180	785.76	3,706.41	529,965.50
					Mixed and non-mixed ALLW total:		57,967	25,421.18	565,619.02	12,669,214.08

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
Mixed waste =	**1**									
2	1	155	ID-AEO-100	100	S3113	Group [Sludge]		1		%wt
2	1	155	ID-AEO-100	100	S3211	Group [Uncemented Resin]		1		%wt
2	1	155	ID-AEO-100	100	S5330	Group [Cloth]		5		%wt
2	1	155	ID-AEO-100	100	S5122	Group [Other glass]		5		%wt
2	1	155	ID-AEO-100	100	S5100	Group [Unknown Inorganics]		1		%wt
2	1	155	ID-AEO-100	100	S5111	Group [Carbon Steel]		34.2		%wt
2	1	155	ID-AEO-100	100	S5310	Group [Plastics]		24.7		%wt
2	1	155	ID-AEO-100	100	S5330	Group [Paper]		28.1		%wt
2	1	156	ID-AEO-101	101	S5330	Group [Paper]		1.0		%wt
2	1	156	ID-AEO-101	101	S5320	Group [Wood]		5.0		%wt
2	1	156	ID-AEO-101	101	S5310	Group [Plastics]		2.0		%wt
2	1	156	ID-AEO-101	101	S5110	Group [Other metals]		0.1		%wt
2	1	156	ID-AEO-101	101	S5122	Group [Other Glass]		10.0		%wt
2	1	156	ID-AEO-101	101	S5121	Group [Concrete]		2.0		%wt
2	1	156	ID-AEO-101	101	S5111	Group [Carbon Steel]		5.0		%wt
2	1	156	ID-AEO-101	101	S5111	Group [Stainless Steel]		74.9		%wt
2	1	297	ID-AEO-102	102	S3113	Group [Aqueous Solutions]		59.0		%wt
2	1	297	ID-AEO-102	102	S3113	Group [Vermiculite]		35.0		%wt
2	1	297	ID-AEO-102	102	S5310	Group [Plastics]		6.0		%wt
2	1	206	ID-AEO-104	104	S3113	Group [Vermiculite]		28.0		%wt
2	1	206	ID-AEO-104	104	S5330	Group [Cloth]		5.0		%wt
2	1	206	ID-AEO-104	104	S5310	Group [Surgeons' gloves]		2.0		%wt
2	1	206	ID-AEO-104	104	S5111	Group [Stainless Steel]		40.0		%wt
2	1	206	ID-AEO-104	104	S3140	Group [Salts]		10.0		%wt
2	1	206	ID-AEO-104	104	S5310	Group [Plastics]		8.0		%wt
2	1	206	ID-AEO-104	104	S5330	Group [Paper]		5.0		%wt
2	1	206	ID-AEO-104	104	S5122	Group [Other Glass]		1.0		%wt
2	1	206	ID-AEO-104	104	X7210	Group [Lead (Bulk Pb)]		1.0		%wt
2	1	300	ID-ANL-161	161	S5330	Tissue-blotting paper	5	15	20	%wt
2	1	300	ID-ANL-161	161	S5310	Polyethylene sheeting, bottles	5	15	15	%wt
2	1	300	ID-ANL-161	161	S5110	Aluminum, stainless steel, hardware	5	12.5	20	%wt
2	1	300	ID-ANL-161	161	S5330	Rags	0	2.5	5	%wt
2	1	300	ID-ANL-161	161	S5122	Glassware	5	50	50	%wt
2	1	300	ID-ANL-161	161	S3113	Oil Dri	0	5	10	%wt
2	1	158	ID-BCO-201	201	S5122	Group [Other Glass]		5.0		%wt
2	1	158	ID-BCO-201	201	S5111	Group [Carbon Steel]		32.0		%wt
2	1	158	ID-BCO-201	201	S5410	Group [Filter dust]		1.0		%wt
2	1	158	ID-BCO-201	201	S5310	Group [Plastics]		5.0		%wt
2	1	158	ID-BCO-201	201	S5313	Group [Plexiglass]		5.0		%wt
2	1	158	ID-BCO-201	201	X7210	Group [Lead (Bulk Pb)]		10.0		%wt
2	1	158	ID-BCO-201	201	S5410	Group [Glass filter media]		6.5		%wt
2	1	158	ID-BCO-201	201	S5110	Group [Other metals]		1.0		%wt
2	1	158	ID-BCO-201	201	S5111	Group [Stainless Steel]		32.0		%wt
2	1	158	ID-BCO-201	201	S4100	Group [Dirt/Soil]		2.5		%wt
2	1	301	ID-BCO-202	202	S3113	Group [Vermiculite]		1.1		%wt
2	1	301	ID-BCO-202	202	S5330	Group [Cloth]		4.7		%wt
2	1	301	ID-BCO-202	202	S5330	Group [Cardboard]		4.8		%wt
2	1	301	ID-BCO-202	202	S5111	Group [Carbon Steel]		0.1		%wt
2	1	301	ID-BCO-202	202	S5310	Group [Rubber]		1.3		%wt
2	1	301	ID-BCO-202	202	S3113	Group [Oil-dri]		1.7		%wt
2	1	301	ID-BCO-202	202	S5110	Group [Other metals]		3.7		%wt
2	1	301	ID-BCO-202	202	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	301	ID-BCO-202	202	S5320	Group [Wood]		4.8		%wt
2	1	301	ID-BCO-202	202	S5330	Group [Paper]		28.2		%wt
2	1	301	ID-BCO-202	202	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	301	ID-BCO-202	202	S5310	Group [Plastics]		39.6		%wt
2	1	302	ID-BCO-203	203	S5111	Group [Other metals]		1.0		%wt
2	1	302	ID-BCO-203	203	S5330	Group [Cloth]		5.0		%wt
2	1	302	ID-BCO-203	203	S5320	Group [Wood]		5.0		%wt
2	1	302	ID-BCO-203	203	S5310	Group [Rubber]		1.0		%wt
2	1	302	ID-BCO-203	203	S5310	Group [Plastics]		7.0		%wt
2	1	302	ID-BCO-203	203	S5111	Group [Carbon Steel]		43.0		%wt
2	1	302	ID-BCO-203	203	X7211	Group [Lead (Bulk Pb)]		6.0		%wt
2	1	302	ID-BCO-203	203	S5330	Group [Cardboard]		5.0		%wt
2	1	302	ID-BCO-203	203	S5122	Group [Other Glass]		17.0		%wt
2	1	302	ID-BCO-203	203	S5330	Group [Paper]		10.0		%wt
2	1	303	ID-BCO-204	204	S3113	Group [Aqueous Solutions]		50.0		%wt
2	1	303	ID-BCO-204	204	S3113	Group [Plaster of Paris]		50.0		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	72	ID-BTO-010	10	S3113	Group [Oil-dri]		1.7		%wt
2	1	72	ID-BTO-010	10	S3113	Group [Vermiculite]		1.1		%wt
2	1	72	ID-BTO-010	10	S5310	Group [Plastics]		39.6		%wt
2	1	72	ID-BTO-010	10	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	72	ID-BTO-010	10	S5110	Group [Other metals]		3.7		%wt
2	1	72	ID-BTO-010	10	S5310	Group [Rubber]		1.3		%wt
2	1	72	ID-BTO-010	10	S5330	Group [Paper]		28.2		%wt
2	1	72	ID-BTO-010	10	S5320	Group [Wood]		6.4		%wt
2	1	72	ID-BTO-010	10	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	72	ID-BTO-010	10	S5330	Group [Cloth]		4.7		%wt
2	1	72	ID-BTO-010	10	S5330	Group [Cardboard]		3.2		%wt
2	1	72	ID-BTO-010	10	S5111	Group [Carbon Steel]		0.1		%wt
2	1	142	ID-BTO-020	20	S5111	Group [Other metals]		30.0		%wt
2	1	142	ID-BTO-020	20	S5123	Group [Firebrick]		30.0		%wt
2	1	142	ID-BTO-020	20	S3121	Group [Absorbents]		10.0		%wt
2	1	142	ID-BTO-020	20	S5310	Group [Plastics]		10.0		%wt
2	1	142	ID-BTO-020	20	S5410	Group [Filters]		20.0		%wt
2	1	34	ID-BTO-030	30	S3120	Group [Sludge]		74.0		%wt
2	1	34	ID-BTO-030	30	S5310	Group [Plastics]		7.0		%wt
2	1	34	ID-BTO-030	30	S5111	Group [Carbon Steel]		7.0		%wt
2	1	34	ID-BTO-030	30	S5330	Group [Cloth]		1.0		%wt
2	1	34	ID-BTO-030	30	S5320	Group [Filters]		10.0		%wt
2	1	34	ID-BTO-030	30	S5330	Group [Paper]		1.0		%wt
2	1	299	ID-CPP-156	156	S3113	Group [Vermiculite]		4.5		%wt
2	1	299	ID-CPP-156	156	S5310	Group [Plastics]		4.8		%wt
2	1	299	ID-CPP-156	156	S3113	Group [Portland Cement]		1.5		%wt
2	1	299	ID-CPP-156	156	S5111	Group [Stainless Steel]		31.1		%wt
2	1	299	ID-CPP-156	156	S3113	Group [Oil-dri]		3.2		%wt
2	1	299	ID-CPP-156	156	X7211	Group [Lead (Bulk Pb)]		0.8		%wt
2	1	299	ID-CPP-156	156	S5111	Group [Other metals]		41.4		%wt
2	1	299	ID-CPP-156	156	S5111	Group [Carbon Steel]		12.5		%wt
2	1	188	ID-INL-150	150	S5100	Group [Unknown Inorganics]		1		%wt
2	1	188	ID-INL-150	150	S5310	Group [Plastics]		25.7		%wt
2	1	188	ID-INL-150	150	S3114	Group [Oil-dri]		5		%wt
2	1	188	ID-INL-150	150	S5111	Group [Other metals]		34.2		%wt
2	1	188	ID-INL-150	150	S3211	Group [Uncemented Resin]		1		%wt
2	1	188	ID-INL-150	150	S5330	Group [Paper]		28.1		%wt
2	1	188	ID-INL-150	150	S5122	Group [Other glass]		5		%wt
2	1	298	ID-INL-155	155	S5122	Group [Other Glass]		1.0		%wt
2	1	298	ID-INL-155	155	S5111	Group [Other metals]		10.0		%wt
2	1	298	ID-INL-155	155	S5310	Group [Plastics]		50.0		%wt
2	1	298	ID-INL-155	155	S5111	Group [Carbon Steel]		10.0		%wt
2	1	298	ID-INL-155	155	S5111	Group [Stainless Steel]		28.0		%wt
2	1	298	ID-INL-155	155	S5310	Group [Rubber]		1.0		%wt
2	1	146	ID-MDO-803	803	S3113	Group [Oil-dri]		3.2		%wt
2	1	146	ID-MDO-803	803	S3113	Group [Vermiculite]		4.5		%wt
2	1	146	ID-MDO-803	803	X7210	Group [Lead (Bulk Pb)]		0.8		%wt
2	1	146	ID-MDO-803	803	S5111	Group [Other metals]		41.4		%wt
2	1	146	ID-MDO-803	803	S5310	Group [Plastics]		4.8		%wt
2	1	146	ID-MDO-803	803	S5111	Group [Stainless Steel]		31.1		%wt
2	1	146	ID-MDO-803	803	S3113	Group [Portland Cement]		1.5		%wt
2	1	146	ID-MDO-803	803	S5111	Group [Carbon Steel]		12.5		%wt
2	1	160	ID-MDO-824	824	S5111	Group [Carbon Steel]		64.6		%wt
2	1	160	ID-MDO-824	824	S5110	Group [Other metals]		0.1		%wt
2	1	160	ID-MDO-824	824	S5310	Group [Plexiglass]		17.9		%wt
2	1	160	ID-MDO-824	824	X7211	Group [Lead (Bulk Pb)]		5.5		%wt
2	1	160	ID-MDO-824	824	S5330	Group [Paper]		1.4		%wt
2	1	160	ID-MDO-824	824	S5330	Group [Cardboard]		2.5		%wt
2	1	160	ID-MDO-824	824	S5320	Group [Wood]		2.5		%wt
2	1	160	ID-MDO-824	824	S5310	Group [Plastics]		0.4		%wt
2	1	160	ID-MDO-824	824	S5410	Group [Filters]		5.0		%wt
2	1	77	ID-MDO-826	826	S5313	Group [Plexiglass]		6.7		%wt
2	1	77	ID-MDO-826	826	S5320	Group [Wood]		33.0		%wt
2	1	77	ID-MDO-826	826	S5111	Group [Carbon Steel]		2.0		%wt
2	1	77	ID-MDO-826	826	S4100	Group [Dirt/Soil]		6.7		%wt
2	1	77	ID-MDO-826	826	S5310	Group [Plastics]		40.0		%wt
2	1	77	ID-MDO-826	826	S5111	Group [Stainless Steel]		1.0		%wt
2	1	77	ID-MDO-826	826	X7211	Group [Lead (Bulk Pb)]		1.0		%wt
2	1	77	ID-MDO-826	826	S5410	Group [Glass filter media]		6.7		%wt
2	1	77	ID-MDO-826	826	S3113	Group [Oil-dri]		3.0		%wt
2	1	58	ID-MDO-834	834	S3113	Group [Aqueous Solutions]		30.0		%wt
2	1	58	ID-MDO-834	834	S5310	Group [Plastics]		5.0		%wt
2	1	58	ID-MDO-834	834	S3113	Group [Clay]		65.0		%wt
2	1	59	ID-MDO-835	835	S5310	Group [Plastics]		5.0		%wt
2	1	59	ID-MDO-835	835	S3113	Group [Aqueous Solutions]		30.0		%wt
2	1	59	ID-MDO-835	835	S3113	Group [Clay]		65.0		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	60	ID-MDO-836	836	S3150	Group [Portland Cement]		41.0		%wt
2	1	60	ID-MDO-836	836	S3113	Group [Sludge]		55.0		%wt
2	1	60	ID-MDO-836	836	S5310	Group [Plastics]		4.0		%wt
2	1	304	ID-MDO-838	838	S4100	Group [Dirt/Soil]		6.7		%wt
2	1	304	ID-MDO-838	838	S5111	Group [Stainless Steel]		1.0		%wt
2	1	304	ID-MDO-838	838	S5320	Group [Wood]		33.0		%wt
2	1	304	ID-MDO-838	838	S5313	Group [Plexiglass]		6.7		%wt
2	1	304	ID-MDO-838	838	S5310	Group [Plastics]		40.0		%wt
2	1	304	ID-MDO-838	838	S3113	Group [Oil-dri]		3.0		%wt
2	1	304	ID-MDO-838	838	S5122	Group [Glass filter media]		6.7		%wt
2	1	304	ID-MDO-838	838	S5111	Group [Carbon Steel]		2.0		%wt
2	1	304	ID-MDO-838	838	X7211	Group [Lead (Bulk Pb)]		1.0		%wt
2	1	191	ID-MDO-842	842	S5111	Group [Carbon Steel]		0.3		%wt
2	1	191	ID-MDO-842	842	S5320	Group [Wood]		2.7		%wt
2	1	191	ID-MDO-842	842	S5310	Group [Plastics]		1.0		%wt
2	1	191	ID-MDO-842	842	S4100	Group [Dirt/Soil]		96.0		%wt
2	1	305	ID-MDO-847	847	S3113	Group [Vermiculite]		10.0		%wt
2	1	305	ID-MDO-847	847	S5310	Group [Rubber]		1.0		%wt
2	1	305	ID-MDO-847	847	S5330	Group [Cloth]		5.0		%wt
2	1	305	ID-MDO-847	847	S5111	Group [Carbon Steel]		1.0		%wt
2	1	305	ID-MDO-847	847	S5330	Group [Cardboard]		5.0		%wt
2	1	305	ID-MDO-847	847	S5320	Group [Wood]		5.0		%wt
2	1	305	ID-MDO-847	847	S5330	Group [Paper]		30.0		%wt
2	1	305	ID-MDO-847	847	S5310	Group [Plastics]		35.0		%wt
2	1	305	ID-MDO-847	847	S5310	Group [Surgeons' gloves]		8.0		%wt
2	1	306	ID-MDO-848	848	S5330	Group [Paper]		1.0		%wt
2	1	306	ID-MDO-848	848	S5121	Group [Concrete]		10.0		%wt
2	1	306	ID-MDO-848	848	S4100	Group [Dirt/Soil]		14.3		%wt
2	1	306	ID-MDO-848	848	S5123	Group [Firebrick]		14.3		%wt
2	1	306	ID-MDO-848	848	S5111	Group [Carbon Steel]		20.0		%wt
2	1	306	ID-MDO-848	848	S5120	Group [Sheetrock]		14.3		%wt
2	1	306	ID-MDO-848	848	S5122	Group [Other Glass]		2.0		%wt
2	1	306	ID-MDO-848	848	S5111	Group [Stainless Steel]		20.0		%wt
2	1	306	ID-MDO-848	848	S5320	Group [Wood]		1.0		%wt
2	1	306	ID-MDO-848	848	S5110	Group [Other metals]		1.0		%wt
2	1	306	ID-MDO-848	848	S5310	Group [Plastics]		2.0		%wt
2	1	29	ID-OFS-111	111	S3121	Group [Sludge]		84.6		%wt
2	1	29	ID-OFS-111	111	S3121	Group [Portland Cement]		0.1		%wt
2	1	29	ID-OFS-111	111	S5310	Group [Plastics]		1.4		%wt
2	1	29	ID-OFS-111	111	S3113	Group [Oil-dri]		3.0		%wt
2	1	29	ID-OFS-111	111	S3113	Group [Vermiculite]		10.9		%wt
2	1	157	ID-OFS-121	121	S5313	Group [Plexiglass]		41.8		%wt
2	1	157	ID-OFS-121	121	S5122	Group [Other Glass]		6.3		%wt
2	1	157	ID-OFS-121	121	S3113	Group [Oil-dri]		12.8		%wt
2	1	157	ID-OFS-121	121	S5310	Group [Plastics]		5.3		%wt
2	1	157	ID-OFS-121	121	S5440	Group [Benelex/lead]		32.4		%wt
2	1	157	ID-OFS-121	121	S5330	Group [Paper]		1.4		%wt
2	1	293	ID-RFO-000	0						
2	1	28	ID-RFO-001	1	S3121	Group [Sludge - 2nd Stage]		46.5		%wt
2	1	28	ID-RFO-001	1	S3113	Group [Oil-dri]		0.5		%wt
2	1	28	ID-RFO-001	1	S3121	Group [Sludge - 1st Stage]		46.5		%wt
2	1	28	ID-RFO-001	1	S5310	Group [Plastics]		1.2		%wt
2	1	28	ID-RFO-001	1	S3121	Group [Portland Cement]		4.7		%wt
2	1	28	ID-RFO-001	1	X7211	Group [Lead (Bulk Pb)]		0.6		%wt
2	1	31	ID-RFO-002	2	S3121	Group [Sludge]		91.9		%wt
2	1	31	ID-RFO-002	2	S3121	Group [Portland Cement]		3.9		%wt
2	1	31	ID-RFO-002	2	S5310	Group [Plastics]		0.4		%wt
2	1	31	ID-RFO-002	2	S3121	Group [Aqueous Solutions]		3.8		%wt
2	1	235	ID-RFO-003	3	S5310	Group [Plastics]		1.2		%wt
2	1	235	ID-RFO-003	3	S3114	Group [Organic Sludge]		60.0		%wt
2	1	235	ID-RFO-003	3	S3114	Group [Oil-dri]		1.0		%wt
2	1	235	ID-RFO-003	3	S3113	Group [Vermiculite]		0.3		%wt
2	1	235	ID-RFO-003	3	S3114	Group [Calcium Silicate]		37.6		%wt
2	1	57	ID-RFO-004	4	S3113	Group [Vermiculite]		0.2		%wt
2	1	57	ID-RFO-004	4	S3113	Group [Oil-dri]		1.1		%wt
2	1	57	ID-RFO-004	4	S3113	Group [Absorbed Liquids]		47.0		%wt
2	1	57	ID-RFO-004	4	S5310	Group [Plastics]		0.9		%wt
2	1	57	ID-RFO-004	4	S3150	Group [Portland Cement]		3.8		%wt
2	1	57	ID-RFO-004	4	S3150	Group [Concrete]		47.0		%wt
2	1	223	ID-RFO-005	5	S5310	Group [Plastics]		5.0		%wt
2	1	223	ID-RFO-005	5	S3143	Group [Salts]		90.0		%wt
2	1	223	ID-RFO-005	5	S3113	Group [Portland Cement]		5.0		%wt
2	1	35	ID-RFO-007	7	S3121	Group [Portland Cement]		0.1		%wt
2	1	35	ID-RFO-007	7	S3121	Group [Sludge]		84.6		%wt
2	1	35	ID-RFO-007	7	S3113	Group [Vermiculite]		10.9		%wt
2	1	35	ID-RFO-007	7	S5310	Group [Plastics]		1.4		%wt
2	1	35	ID-RFO-007	7	S3113	Group [Oil-dri]		3.0		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	192	ID-RFO-090	90	S5310	Group [Plastics]		1.0		%wt
2	1	192	ID-RFO-090	90	S4100	Group [Dirt/Soil]		99.0		%wt
2	1	55	ID-RFO-112	112	S5310	Group [Plastics]		1.2		%wt
2	1	55	ID-RFO-112	112	S3113	Group [Vermiculite]		0.3		%wt
2	1	55	ID-RFO-112	112	S3114	Group [Organic Sludge]		60.0		%wt
2	1	55	ID-RFO-112	112	S3114	Group [Calcium Silicate]		37.6		%wt
2	1	55	ID-RFO-112	112	S3114	Group [Oil-dri]		1.0		%wt
2	1	30	ID-RFO-113	113	S3150	Group [Portland Cement]		3.8		%wt
2	1	30	ID-RFO-113	113	S3150	Group [Concrete]		47.0		%wt
2	1	30	ID-RFO-113	113	S5310	Group [Plastics]		0.9		%wt
2	1	30	ID-RFO-113	113	S3113	Group [Vermiculite]		0.2		%wt
2	1	30	ID-RFO-113	113	S3113	Group [Absorbed Liquids]		47.0		%wt
2	1	30	ID-RFO-113	113	S3113	Group [Oil-dri]		1.1		%wt
2	1	56	ID-RFO-114	114	S3113	Group [Vermiculite]		1.7		%wt
2	1	56	ID-RFO-114	114	S3123	Group [Sludge]		84.0		%wt
2	1	56	ID-RFO-114	114	S5310	Group [Plastics]		12.1		%wt
2	1	56	ID-RFO-114	114	S5330	Group [Paper]		0.8		%wt
2	1	56	ID-RFO-114	114	S3113	Group [Oil-dri]		1.5		%wt
2	1	73	ID-RFO-116	116	S5330	Group [Cloth]		4.7		%wt
2	1	73	ID-RFO-116	116	S5111	Group [Carbon Steel]		0.1		%wt
2	1	73	ID-RFO-116	116	S3113	Group [Oil-dri]		1.7		%wt
2	1	73	ID-RFO-116	116	S5320	Group [Wood]		4.8		%wt
2	1	73	ID-RFO-116	116	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	73	ID-RFO-116	116	S5330	Group [Paper]		28.2		%wt
2	1	73	ID-RFO-116	116	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	73	ID-RFO-116	116	S5110	Group [Other metals]		3.7		%wt
2	1	73	ID-RFO-116	116	S5330	Group [Cardboard]		4.8		%wt
2	1	73	ID-RFO-116	116	S5310	Group [Rubber]		1.3		%wt
2	1	73	ID-RFO-116	116	S5310	Group [Plastics]		39.6		%wt
2	1	73	ID-RFO-116	116	S3113	Group [Vermiculite]		1.1		%wt
2	1	141	ID-RFO-117	117	S3113	Group [Portland Cement]		1.5		%wt
2	1	141	ID-RFO-117	117	X7210	Group [Lead (Bulk Pb)]		0.8		%wt
2	1	141	ID-RFO-117	117	S5111	Group [Carbon Steel]		12.5		%wt
2	1	141	ID-RFO-117	117	S5111	Group [Stainless Steel]		31.1		%wt
2	1	141	ID-RFO-117	117	S5111	Group [Other metals]		41.4		%wt
2	1	141	ID-RFO-117	117	S3113	Group [Oil-dri]		3.2		%wt
2	1	141	ID-RFO-117	117	S5310	Group [Plastics]		4.8		%wt
2	1	141	ID-RFO-117	117	S3113	Group [Vermiculite]		4.5		%wt
2	1	120	ID-RFO-118	118	S5310	Group [Plastics]		6.0		%wt
2	1	120	ID-RFO-118	118	S3117	Group [Glass Rashig Rings]		1.2		%wt
2	1	120	ID-RFO-118	118	S3117	Group [Other Glass]		87.7		%wt
2	1	120	ID-RFO-118	118	S5111	Group [Other metals]		0.3		%wt
2	1	120	ID-RFO-118	118	S5330	Group [Paper]		0.3		%wt
2	1	120	ID-RFO-118	118	S5310	Group [Rubber]		0.2		%wt
2	1	120	ID-RFO-118	118	S3113	Group [Vermiculite]		1.0		%wt
2	1	120	ID-RFO-118	118	S3113	Group [Oil-dri]		3.3		%wt
2	1	102	ID-RFO-119	119	S3113	Group [Oil-dri]		4.4		%wt
2	1	102	ID-RFO-119	119	S5310	Group [Plastics]		7.4		%wt
2	1	102	ID-RFO-119	119	S5410	Group [Filter dust]		35.3		%wt
2	1	102	ID-RFO-119	119	S5410	Group [Glass filter media]		52.9		%wt
2	1	93	ID-RFO-122	122	S5320	Group [Wood]		1.0		%wt
2	1	93	ID-RFO-122	122	S5450	Group [Asphalt]		32.5		%wt
2	1	93	ID-RFO-122	122	S5310	Group [Plastics]		3.0		%wt
2	1	93	ID-RFO-122	122	S4100	Group [Dirt/Soil]		32.5		%wt
2	1	93	ID-RFO-122	122	S5111	Group [Carbon Steel]		1.0		%wt
2	1	93	ID-RFO-122	122	S5121	Group [Concrete]		30.0		%wt
2	1	129	ID-RFO-123	123	S5310	Group [Rubber]		2.0		%wt
2	1	129	ID-RFO-123	123	S3113	Group [Oil-dri]		2.3		%wt
2	1	129	ID-RFO-123	123	S5311	Group [Leaded Rubber]		90.2		%wt
2	1	129	ID-RFO-123	123	S5330	Group [Cloth]		0.8		%wt
2	1	129	ID-RFO-123	123	S3113	Group [Vermiculite]		2.0		%wt
2	1	129	ID-RFO-123	123	S5310	Group [Plastics]		2.7		%wt
2	1	159	ID-RFO-241	241	S5330	Group [Cardboard]		2.6		%wt
2	1	159	ID-RFO-241	241	S5320	Group [Wood]		2.6		%wt
2	1	159	ID-RFO-241	241	S5111	Group [Other metals]		13.4		%wt
2	1	159	ID-RFO-241	241	X7211	Group [Lead (Bulk Pb)]		46.5		%wt
2	1	159	ID-RFO-241	241	S5310	Group [Plastics]		30.9		%wt
2	1	159	ID-RFO-241	241	S3113	Group [Oil-dri]		4.1		%wt
2	1	32	ID-RFO-290	290	S3123	Group [Sludge]		84.0		%wt
2	1	32	ID-RFO-290	290	S3113	Group [Oil-dri]		1.5		%wt
2	1	32	ID-RFO-290	290	S5310	Group [Plastics]		12.1		%wt
2	1	32	ID-RFO-290	290	S5330	Group [Paper]		0.8		%wt
2	1	32	ID-RFO-290	290	S3113	Group [Vermiculite]		1.7		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	33	ID-RFO-292	292	S5330	Group [Paper]		0.8		%wt
2	1	33	ID-RFO-292	292	S3113	Group [Oil-dri]		1.5		%wt
2	1	33	ID-RFO-292	292	S3123	Group [Sludge]		84.0		%wt
2	1	33	ID-RFO-292	292	S3113	Group [Vermiculite]		1.7		%wt
2	1	33	ID-RFO-292	292	S5310	Group [Plastics]		12.1		%wt
2	1	171	ID-RFO-300	300	S3113	Group [Vermiculite]		5.0		%wt
2	1	171	ID-RFO-300	300	S5126	Group [Graphite molds]		89.3		%wt
2	1	171	ID-RFO-300	300	S5310	Group [Plastics]		2.4		%wt
2	1	171	ID-RFO-300	300	S5330	Group [Paper]		2.1		%wt
2	1	171	ID-RFO-300	300	S3113	Group [Oil-dri]		1.3		%wt
2	1	172	ID-RFO-301	301	S5330	Group [Paper]		2.4		%wt
2	1	172	ID-RFO-301	301	S5126	Group [Graphite molds]		86.6		%wt
2	1	172	ID-RFO-301	301	S5310	Group [Plastics]		3.7		%wt
2	1	172	ID-RFO-301	301	S5110	Group [Other metals]		0.1		%wt
2	1	172	ID-RFO-301	301	S3113	Group [Vermiculite]		1.6		%wt
2	1	172	ID-RFO-301	301	S3113	Group [Oil-dri]		5.5		%wt
2	1	51	ID-RFO-302	302	S5440	Group [Benelex/lead]		32.4		%wt
2	1	51	ID-RFO-302	302	S5122	Group [Other Glass]		6.3		%wt
2	1	51	ID-RFO-302	302	S5310	Group [Plastics]		5.3		%wt
2	1	51	ID-RFO-302	302	S3113	Group [Oil-dri]		12.8		%wt
2	1	51	ID-RFO-302	302	S5313	Group [Plexiglass]		41.8		%wt
2	1	51	ID-RFO-302	302	S5330	Group [Paper]		1.4		%wt
2	1	143	ID-RFO-320	320	S3113	Group [Vermiculite]		6.1		%wt
2	1	143	ID-RFO-320	320	X7211	Group [Lead (Bulk Pb)]		3.8		%wt
2	1	143	ID-RFO-320	320	S5111	Group [Tantalum (10W)]		18.7		%wt
2	1	143	ID-RFO-320	320	S5111	Group [Carbon Steel]		25.5		%wt
2	1	143	ID-RFO-320	320	S3113	Group [Oil-dri]		2.0		%wt
2	1	143	ID-RFO-320	320	S5310	Group [Plastics]		4.6		%wt
2	1	143	ID-RFO-320	320	S5330	Group [Paper]		1.7		%wt
2	1	143	ID-RFO-320	320	S5111	Group [Other metals]		37.5		%wt
2	1	104	ID-RFO-328	328	S3113	Group [Portland Cement]		0.2		%wt
2	1	104	ID-RFO-328	328	S3113	Group [Vermiculite]		8.2		%wt
2	1	104	ID-RFO-328	328	S5410	Group [Filters]		74.1		%wt
2	1	104	ID-RFO-328	328	S5330	Group [Cloth]		0.3		%wt
2	1	104	ID-RFO-328	328	S5310	Group [Plastics]		17.2		%wt
2	1	74	ID-RFO-330	330	S5330	Group [Cardboard]		4.8		%wt
2	1	74	ID-RFO-330	330	S5310	Group [Plastics]		39.6		%wt
2	1	74	ID-RFO-330	330	S5111	Group [Carbon Steel]		0.1		%wt
2	1	74	ID-RFO-330	330	S3113	Group [Vermiculite]		1.1		%wt
2	1	74	ID-RFO-330	330	S5320	Group [Wood]		4.8		%wt
2	1	74	ID-RFO-330	330	S5330	Group [Cloth]		4.7		%wt
2	1	74	ID-RFO-330	330	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	74	ID-RFO-330	330	S3113	Group [Oil-dri]		1.7		%wt
2	1	74	ID-RFO-330	330	S5110	Group [Other metals]		3.7		%wt
2	1	74	ID-RFO-330	330	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	74	ID-RFO-330	330	S5310	Group [Rubber]		1.3		%wt
2	1	74	ID-RFO-330	330	S5330	Group [Paper]		28.2		%wt
2	1	105	ID-RFO-335	335	S5410	Group [Asbestos filters and insulation]		83.2		%wt
2	1	105	ID-RFO-335	335	S5410	Group [Filter dust]		5.0		%wt
2	1	105	ID-RFO-335	335	S3113	Group [Oil-dri]		4.4		%wt
2	1	105	ID-RFO-335	335	S5310	Group [Plastics]		7.4		%wt
2	1	75	ID-RFO-336	336	S3113	Group [Portland Cement]		2.4		%wt
2	1	75	ID-RFO-336	336	S5310	Group [Plastics]		47.5		%wt
2	1	75	ID-RFO-336	336	S5330	Group [Cardboard]		1.6		%wt
2	1	75	ID-RFO-336	336	S5330	Group [Cloth]		7.0		%wt
2	1	75	ID-RFO-336	336	S5311	Group [Leaded Rubber]		2.1		%wt
2	1	75	ID-RFO-336	336	S5310	Group [Rubber]		0.5		%wt
2	1	75	ID-RFO-336	336	S5310	Group [Surgeons' gloves]		2.9		%wt
2	1	75	ID-RFO-336	336	S3113	Group [Vermiculite]		5.6		%wt
2	1	75	ID-RFO-336	336	S5320	Group [Wood]		1.6		%wt
2	1	75	ID-RFO-336	336	S5110	Group [Other metals]		2.3		%wt
2	1	75	ID-RFO-336	336	S3113	Group [Oil-dri]		2.3		%wt
2	1	75	ID-RFO-336	336	S5330	Group [Paper]		23.9		%wt
2	1	76	ID-RFO-337	337	S5310	Group [Rubber]		0.6		%wt
2	1	76	ID-RFO-337	337	S5330	Group [Paper]		4.4		%wt
2	1	76	ID-RFO-337	337	S5310	Group [Plastics]		32.3		%wt
2	1	76	ID-RFO-337	337	S3140	Group [Salts]		0.4		%wt
2	1	76	ID-RFO-337	337	S5111	Group [Stainless Steel]		23.0		%wt
2	1	76	ID-RFO-337	337	S5310	Group [Surgeons' gloves]		16.0		%wt
2	1	76	ID-RFO-337	337	S3113	Group [Vermiculite]		2.3		%wt
2	1	76	ID-RFO-337	337	S5320	Group [Wood]		3.8		%wt
2	1	76	ID-RFO-337	337	L1100	Group [Aqueous Solutions]		7.6		%wt
2	1	76	ID-RFO-337	337	S3113	Group [Portland Cement]		1.2		%wt
2	1	76	ID-RFO-337	337	S5330	Group [Cloth]		1.0		%wt
2	1	76	ID-RFO-337	337	S5330	Group [Cardboard]		3.8		%wt
2	1	76	ID-RFO-337	337	S3113	Group [Oil-dri]		1.2		%wt
2	1	76	ID-RFO-337	337	S5110	Group [Other metals]		2.5		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	106	ID-RFO-338	338	S5310	Group [Plastics]		7.4		%wt
2	1	106	ID-RFO-338	338	S5410	Group [Filter dust]		4.0		%wt
2	1	106	ID-RFO-338	338	S5410	Group [Glass filter media]		42.1		%wt
2	1	106	ID-RFO-338	338	S3113	Group [Oil-dri]		4.4		%wt
2	1	106	ID-RFO-338	338	S5410	Group [Asbestos filters and insulation]		42.1		%wt
2	1	130	ID-RFO-339	339	S5311	Group [Leaded Rubber]		90.2		%wt
2	1	130	ID-RFO-339	339	S5330	Group [Cloth]		0.8		%wt
2	1	130	ID-RFO-339	339	S5310	Group [Rubber]		2.0		%wt
2	1	130	ID-RFO-339	339	S5310	Group [Plastics]		2.7		%wt
2	1	130	ID-RFO-339	339	S3113	Group [Vermiculite]		2.0		%wt
2	1	130	ID-RFO-339	339	S3113	Group [Oil-dri]		2.3		%wt
2	1	107	ID-RFO-360	360	S5310	Group [Plastics]		7.4		%wt
2	1	107	ID-RFO-360	360	S3113	Group [Oil-dri]		4.4		%wt
2	1	107	ID-RFO-360	360	S5410	Group [Glass filter media]		42.1		%wt
2	1	107	ID-RFO-360	360	S5410	Group [Filter dust]		4.0		%wt
2	1	107	ID-RFO-360	360	S5410	Group [Asbestos filters and insulation]		42.1		%wt
2	1	94	ID-RFO-371	371	S3113	Group [Vermiculite]		1.2		%wt
2	1	94	ID-RFO-371	371	S5110	Group [Other metals]		0.1		%wt
2	1	94	ID-RFO-371	371	S3113	Group [Oil-dri]		10.9		%wt
2	1	94	ID-RFO-37	371	S4100	Group [Dirt/Soil]		0.4		%wt
2	1	94	ID-RFO-371	371	S5123	Group [Firebrick]		77.9		%wt
2	1	94	ID-RFO-371	371	S5330	Group [Paper]		5.2		%wt
2	1	94	ID-RFO-371	371	S5310	Group [Plastics]		4.3		%wt
2	1	190	ID-RFO-374	374	S5121	Group [Concrete]		30.0		%wt
2	1	190	ID-RFO-374	374	S5111	Group [Carbon Steel]		1.0		%wt
2	1	190	ID-RFO-374	374	S5310	Group [Plastics]		3.0		%wt
2	1	190	ID-RFO-374	374	S5320	Group [Wood]		1.0		%wt
2	1	190	ID-RFO-374	374	S5450	Group [Asphalt]		32.5		%wt
2	1	190	ID-RFO-374	374	S4100	Group [Dirt/Soil]		32.5		%wt
2	1	95	ID-RFO-375	375	S5111	Group [Stainless Steel]		8.3		%wt
2	1	95	ID-RFO-375	375	S3113	Group [Oil-dri]		84.7		%wt
2	1	95	ID-RFO-375	375	S5310	Group [Plastics]		6.9		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Filter dust]		1.3		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Glass filter media]		30.9		%wt
2	1	108	ID-RFO-376	376	S5310	Group [Plastics]		7.0		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Portland Cement]		10.0		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Wood]		10.0		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Other metals]		10.0		%wt
2	1	108	ID-RFO-376	376	S5410	Group [Asbestos filters and insulation]		30.9		%wt
2	1	217	ID-RFO-430	430	S3113	Group [Portland Cement]		0.3		%wt
2	1	217	ID-RFO-430	430	S5111	Group [Carbon Steel]		0.1		%wt
2	1	217	ID-RFO-430	430	S4100	Group [Dirt/Soil]		0.1		%wt
2	1	217	ID-RFO-430	430	S3113	Group [Oil-dri]		5.2		%wt
2	1	217	ID-RFO-430	430	S5310	Group [Plastics]		11.9		%wt
2	1	217	ID-RFO-430	430	S3113	Group [Vermiculite]		0.3		%wt
2	1	217	ID-RFO-430	430	S3211	Group [Uncemented Resin]		82.1		%wt
2	1	218	ID-RFO-431	431	S3113	Group [Oil-dri]		5.2		%wt
2	1	218	ID-RFO-431	431	S4100	Group [Dirt/Soil]		0.1		%wt
2	1	218	ID-RFO-431	431	S5310	Group [Plastics]		11.9		%wt
2	1	218	ID-RFO-431	431	S3113	Group [Portland Cement]		0.3		%wt
2	1	218	ID-RFO-431	431	S3211	Group [Uncemented Resin]		82.1		%wt
2	1	218	ID-RFO-431	431	S3113	Group [Vermiculite]		0.3		%wt
2	1	218	ID-RFO-431	431	S5111	Group [Carbon Steel]		0.1		%wt
2	1	219	ID-RFO-432	432	S5111	Group [Carbon Steel]		0.1		%wt
2	1	219	ID-RFO-432	432	S3113	Group [Vermiculite]		0.3		%wt
2	1	219	ID-RFO-432	432	S3113	Group [Portland Cement]		0.3		%wt
2	1	219	ID-RFO-432	432	S5310	Group [Plastics]		11.9		%wt
2	1	219	ID-RFO-432	432	S3113	Group [Oil-dri]		5.2		%wt
2	1	219	ID-RFO-432	432	S3211	Group [Resin]		41.0		%wt
2	1	219	ID-RFO-432	432	S4100	Group [Dirt/Soil]		0.1		%wt
2	1	219	ID-RFO-432	432	S3211	Group [Portland Cement]		41.1		%wt
2	1	121	ID-RFO-440	440	S3117	Group [Glass Rashig Rings]		1.2		%wt
2	1	121	ID-RFO-440	440	S3117	Group [Other Glass]		87.7		%wt
2	1	121	ID-RFO-440	440	S5310	Group [Plastics]		6.0		%wt
2	1	121	ID-RFO-440	440	S3113	Group [Oil-dri]		3.3		%wt
2	1	121	ID-RFO-440	440	S5112	Group [Other metals]		0.3		%wt
2	1	121	ID-RFO-440	440	S5310	Group [Rubber]		0.2		%wt
2	1	121	ID-RFO-440	440	S3113	Group [Vermiculite]		1.0		%wt
2	1	121	ID-RFO-440	440	S5330	Group [Paper]		0.3		%wt
2	1	122	ID-RFO-441	441	S5310	Group [Plastics]		1.8		%wt
2	1	122	ID-RFO-441	441	S3113	Group [Portland Cement]		0.1		%wt
2	1	122	ID-RFO-441	441	S5330	Group [Paper]		6.6		%wt
2	1	122	ID-RFO-441	441	S3113	Group [Oil-dri]		36.4		%wt
2	1	122	ID-RFO-441	441	S3117	Group [Glass Rashig Rings]		55.1		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	123	ID-RFO-442	442	S3113	Group [Vermiculite]		5.5		%wt
2	1	123	ID-RFO-442	442	S5330	Group [Paper]		10.2		%wt
2	1	123	ID-RFO-442	442	S3117	Group [Glass Rashig Rings]		74.5		%wt
2	1	123	ID-RFO-442	442	S3113	Group [Oil-dri]		5.1		%wt
2	1	123	ID-RFO-442	442	S5310	Group [Plastics]		4.6		%wt
2	1	131	ID-RFO-463	463	S3113	Group [Vermiculite]		2.0		%wt
2	1	131	ID-RFO-463	463	S5310	Group [Rubber]		2.0		%wt
2	1	131	ID-RFO-463	463	S5310	Group [Plastics]		2.7		%wt
2	1	131	ID-RFO-463	463	S3113	Group [Oil-dri]		2.3		%wt
2	1	131	ID-RFO-463	463	S5330	Group [Cloth]		0.8		%wt
2	1	131	ID-RFO-463	463	S5311	Group [Leaded Rubber]		90.2		%wt
2	1	52	ID-RFO-464	464	S5330	Group [Paper]		1.2		%wt
2	1	52	ID-RFO-464	464	S5310	Group [Plastics]		5.9		%wt
2	1	52	ID-RFO-464	464	S3113	Group [Oil-dri]		15.3		%wt
2	1	52	ID-RFO-464	464	S5440	Group [Benelex/lead]		71.9		%wt
2	1	52	ID-RFO-464	464	S5440	Group [Other Glass]		5.7		%wt
2	1	144	ID-RFO-480	480	S5330	Group [Paper]		2.0		%wt
2	1	144	ID-RFO-480	480	S5320	Group [Wood]		0.1		%wt
2	1	144	ID-RFO-480	480	S5122	Group [Glass filter media]		0.6		%wt
2	1	144	ID-RFO-480	480	S5121	Group [Concrete]		0.1		%wt
2	1	144	ID-RFO-480	480	S5123	Group [Ceramic Molds]		0.6		%wt
2	1	144	ID-RFO-480	480	S5111	Group [Carbon Steel]		58.1		%wt
2	1	144	ID-RFO-480	480	S3117	Group [Glass Rashig Rings]		0.2		%wt
2	1	144	ID-RFO-480	480	X7210	Group [Lead (Bulk Pb)]		3.8		%wt
2	1	144	ID-RFO-480	480	S5311	Group [Leaded Rubber]		0.1		%wt
2	1	144	ID-RFO-480	480	S5125	Group [Asbestos filters and insulation]		0.6		%wt
2	1	144	ID-RFO-480	480	S4100	Group [Dirt/Soil]		0.6		%wt
2	1	144	ID-RFO-480	480	S5310	Group [Plastics]		3.4		%wt
2	1	144	ID-RFO-480	480	S5111	Group [Stainless Steel]		8.0		%wt
2	1	144	ID-RFO-480	480	S5111	Group [Tantalum (10W)]		0.6		%wt
2	1	144	ID-RFO-480	480	S3113	Group [Vermiculite]		0.3		%wt
2	1	144	ID-RFO-480	480	S5110	Group [Other metals]		19.4		%wt
2	1	144	ID-RFO-480	480	S3113	Group [Oil-dri]		0.9		%wt
2	1	144	ID-RFO-480	480	S5122	Group [Other Glass]		0.7		%wt
2	1	145	ID-RFO-481	481	S5111	Group [Carbon Steel]		12.5		%wt
2	1	145	ID-RFO-481	481	S3113	Group [Vermiculite]		4.5		%wt
2	1	145	ID-RFO-481	481	S5110	Group [Other metals]		41.4		%wt
2	1	145	ID-RFO-481	481	S5310	Group [Plastics]		4.8		%wt
2	1	145	ID-RFO-481	481	S5111	Group [Stainless Steel]		31.1		%wt
2	1	145	ID-RFO-481	481	S3113	Group [Oil-dri]		3.2		%wt
2	1	145	ID-RFO-481	481	X7210	Group [Lead (Bulk Pb)]		0.8		%wt
2	1	145	ID-RFO-481	481	S3113	Group [Portland Cement]		1.5		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Filter dust]		2.0		%wt
2	1	109	ID-RFO-490	490	S3113	Group [Vermiculite]		2.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Wood]		25.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Stainless Steel]		36.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Rubber]		2.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Glass filter media]		11.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Asbestos filters and insulation]		11.0		%wt
2	1	109	ID-RFO-490	490	S5410	Group [Cardboard]		2.0		%wt
2	1	109	ID-RFO-490	490	S3113	Group [Oil-dri]		1.0		%wt
2	1	109	ID-RFO-490	490	S3113	Group [Portland Cement]		1.0		%wt
2	1	109	ID-RFO-490	490	S5310	Group [Plastics]		7.0		%wt
2	1	78	ID-RFO-900	900	S5111	Group [Carbon Steel]		0.1		%wt
2	1	78	ID-RFO-900	900	S5330	Group [Cloth]		4.7		%wt
2	1	78	ID-RFO-900	900	S5310	Group [Plastics]		39.6		%wt
2	1	78	ID-RFO-900	900	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	78	ID-RFO-900	900	S5310	Group [Rubber]		1.3		%wt
2	1	78	ID-RFO-900	900	S5320	Group [Wood]		4.8		%wt
2	1	78	ID-RFO-900	900	S5110	Group [Other metals]		3.7		%wt
2	1	78	ID-RFO-900	900	S3113	Group [Oil-dri]		1.7		%wt
2	1	78	ID-RFO-900	900	S3113	Group [Vermiculite]		1.1		%wt
2	1	78	ID-RFO-900	900	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	78	ID-RFO-900	900	S5330	Group [Paper]		28.2		%wt
2	1	78	ID-RFO-900	900	S5330	Group [Cardboard]		4.8		%wt
2	1	161	ID-RFO-950	950	S5122	Group [Other Glass]		17.9		%wt
2	1	161	ID-RFO-950	950	S5111	Group [Carbon Steel]		43.1		%wt
2	1	161	ID-RFO-950	950	X7211	Group [Lead (Bulk Pb)]		5.5		%wt
2	1	161	ID-RFO-950	950	S5320	Group [Wood]		5.0		%wt
2	1	161	ID-RFO-950	950	S5120	Group [Sheetrock]		26.5		%wt
2	1	161	ID-RFO-950	950	S5330	Group [Paper]		1.4		%wt
2	1	161	ID-RFO-950	950	S5111	Group [Other metals]		0.1		%wt
2	1	161	ID-RFO-950	950	S5310	Group [Plastics]		0.4		%wt

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
2	1	79	ID-RFO-970	970	S3113	Group [Vermiculite]		1.1		%wt
2	1	79	ID-RFO-970	970	S5320	Group [Wood]		4.8		%wt
2	1	79	ID-RFO-970	970	S5330	Group [Paper]		28.2		%wt
2	1	79	ID-RFO-970	970	S5310	Group [Plastics]		39.6		%wt
2	1	79	ID-RFO-970	970	S5111	Group [Carbon Steel]		0.1		%wt
2	1	79	ID-RFO-970	970	S5330	Group [Cardboard]		4.8		%wt
2	1	79	ID-RFO-970	970	S5311	Group [Leaded Rubber]		2.4		%wt
2	1	79	ID-RFO-970	970	S3113	Group [Oil-dri]		1.7		%wt
2	1	79	ID-RFO-970	970	S5110	Group [Other metals]		3.7		%wt
2	1	79	ID-RFO-970	970	S5310	Group [Rubber]		1.3		%wt
2	1	79	ID-RFO-970	970	S5310	Group [Surgeons' gloves]		7.7		%wt
2	1	79	ID-RFO-970	970	S5330	Group [Cloth]		4.7		%wt
2	1	61	ID-RFO-976	976	S3113	Group [Portland Cement]		65.0		%wt
2	1	61	ID-RFO-976	976	S5310	Group [Plastics]		5.0		%wt
2	1	61	ID-RFO-976	976	S3120	Group [Sludge]		30.0		%wt
2	1	62	ID-RFO-978	978	S3120	Group [Portland Cement]		65.0		%wt
2	1	62	ID-RFO-978	978	S3220	Group [Sludge]		30.0		%wt
2	1	62	ID-RFO-978	978	S5310	Group [Plastics]		5.0		%wt
2	1	193	ID-RFO-990	990	S5310	Group [Plastics]		1.0		%wt
2	1	193	ID-RFO-990	990	S4100	Group [Dirt/Soil]		99.0		%wt
2	1	294	ID-RFO-9999	9999						
2	1	240	ID-TAN-162	*	L1290	Aqueous Slurry				
2	1	241	ID-TAN-163	*	S3110	Dry Sludge	99	99	100	%wt
2	1	779	LB-W011	*	X7212					
2	1	779	LB-W011	*	X7211					
2	1	774	LB-W012	*	S5440					
2	1	780	LB-W014	*	X6100					
2	1	780	LB-W014	*	X6200					
2	1	780	LB-W014	*	X6300					
2	1	780	LB-W014	*	X6900					
2	1	781	LB-W017	*						
2	1	782	LB-W018	*						
2	1	783	LB-W019	*						

End of category 2 mixed waste 1

Table 3. INEL alpha low level mixed and non-mixed waste matrix information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Matrix Code	Component	Concentration low level	Concentration typical	Concentration upper level	Units
Mixed waste = 2										
2	2	764	CH-ANL-RDA	*						
2	2	207	ID-INL-153N	153	S5310	Group [Plastics]		20.0		%wt
2	2	207	ID-INL-153N	153	S5330	Group [Paper]		10.0		%wt
2	2	207	ID-INL-153N	153	S5310	Group [Rubber]		5.0		%wt
2	2	207	ID-INL-153N	153	X7210	Group [Lead Shielding]		20.0		%wt
2	2	207	ID-INL-153N	153	S5330	Group [Cloth]		10.0		%wt
2	2	207	ID-INL-153N	153	S5122	Group [Other Glass]		5.0		%wt
2	2	207	ID-INL-153N	153	S5111	Group [Stainless Steel]		5.0		%wt
2	2	207	ID-INL-153N	153	S3113	Group [Oil-dri]		20.0		%wt
2	2	207	ID-INL-153N	153	S5310	Group [Surgeons' gloves]		5.0		%wt
2	2	162	ID-MDO-825N	825	S5310	Group [Plastics]		4.8		%wt
2	2	162	ID-MDO-825N	825	S3113	Group [Oil-dri]		3.2		%wt
2	2	162	ID-MDO-825N	825	S5110	Group [Other metals]		41.4		%wt
2	2	162	ID-MDO-825N	825	S5111	Group [Carbon Steel]		12.5		%wt
2	2	162	ID-MDO-825N	825	S3113	Group [Vermiculite]		4.5		%wt
2	2	162	ID-MDO-825N	825	S5111	Group [Stainless Steel]		31.1		%wt
2	2	162	ID-MDO-825N	825	S3113	Group [Portland Cement]		1.5		%wt
2	2	162	ID-MDO-825N	825	X7210	Group [Lead (Bulk Pb)]		0.8		%wt
2	2	36	ID-RFO-095N	95	S3122	Group [Sludge]		89.0		%wt
2	2	36	ID-RFO-095N	95	S3113	Group [Portland Cement]		10.0		%wt
2	2	36	ID-RFO-095N	95	S5310	Group [Plastics]		1.0		%wt
2	2	173	ID-RFO-115N	115	S3113	Group [Vermiculite]		5.0		%wt
2	2	173	ID-RFO-115N	115	S5330	Group [Paper]		2.1		%wt
2	2	173	ID-RFO-115N	115	S5310	Group [Plastics]		2.4		%wt
2	2	173	ID-RFO-115N	115	S3113	Group [Oil-dri]		1.3		%wt
2	2	173	ID-RFO-115N	115	S5126	Group [Graphite molds]		89.3		%wt
2	2	174	ID-RFO-310N	310	S5330	Group [Paper]		2.4		%wt
2	2	174	ID-RFO-310N	310	S3113	Group [Oil-dri]		5.5		%wt
2	2	174	ID-RFO-310N	310	S5111	Group [Other metals]		0.1		%wt
2	2	174	ID-RFO-310N	310	S5310	Group [Plastics]		3.7		%wt
2	2	174	ID-RFO-310N	310	S3110	Group [Graphite]		86.6		%wt
2	2	174	ID-RFO-310N	310	S3113	Group [Vermiculite]		1.6		%wt
2	2	175	ID-RFO-370N	370	S3117	Group [Ceramic Molds]		83.3		%wt
2	2	175	ID-RFO-370N	370	S5310	Group [Plastics]		6.9		%wt
2	2	175	ID-RFO-370N	370	S3113	Group [Oil-dri]		1.4		%wt
2	2	175	ID-RFO-370N	370	S5111	Group [Carbon Steel]		8.3		%wt
2	2	189	ID-RFO-372N	372	S3113	Group [Oil-dri]		1.4		%wt
2	2	189	ID-RFO-372N	372	S3112	Group [Carbon Steel]		33.3		%wt
2	2	189	ID-RFO-372N	372	S5310	Group [Plastics]		6.9		%wt
2	2	189	ID-RFO-372N	372	S3117	Group [Other Glass]		16.7		%wt
2	2	189	ID-RFO-372N	372	S5111	Group [Stainless Steel]		8.3		%wt
2	2	189	ID-RFO-372N	372	S3112	Group [Aluminum (metal or oxide form)]		33.3		%wt
2	2	194	ID-RFO-425N	425	S3111	Group [Ash]		89.0		%wt
2	2	194	ID-RFO-425N	425	S3113	Group [Oil-dri]		1.0		%wt
2	2	194	ID-RFO-425N	425	S5310	Group [Plastics]		8.0		%wt
2	2	194	ID-RFO-425N	425	S3113	Group [Vermiculite]		2.0		%wt
2	2	96	ID-RFO-960N	960	S5310	Group [Plastics]		3.0		%wt
2	2	96	ID-RFO-960N	960	S5320	Group [Wood]		1.0		%wt
2	2	96	ID-RFO-960N	960	S5450	Group [Asphalt]		32.5		%wt
2	2	96	ID-RFO-960N	960	S5111	Group [Carbon Steel]		1.0		%wt
2	2	96	ID-RFO-960N	960	S4100	Group [Dirt/Soil]		32.5		%wt
2	2	96	ID-RFO-960N	960	S5121	Group [Concrete]		30.0		%wt
2	2	37	ID-RFO-995N	995	S3122	Group [Sludge]		89.0		%wt
2	2	37	ID-RFO-995N	995	S5310	Group [Plastics]		1.0		%wt
2	2	37	ID-RFO-995N	995	S3113	Group [Portland Cement]		10.0		%wt
2	2	208	ID-TRA-154N	154	S5111	Group [Other metals]		8		%wt
2	2	208	ID-TRA-154N	154	X7211	Group [Lead (Bulk Pb)]		10		%wt
2	2	208	ID-TRA-154N	154	S4100	Group [Dirt/Soil]		2		%wt
2	2	208	ID-TRA-154N	154	S5121	Group [Concrete]		80		%wt

End of category 2 mixed waste 2

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
Mixed waste = 1				
2	1	**155**	**ID-AEO-100**	**100**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	2.16E+02	1.05E-06	6.50E+01	8.69E-07	6.50E+01	1.54E-06	9.57E+01	1.28E-06	9.57E+01
PU-242	3.00E+01	2.54E-05	9.99E+01	2.36E-07	9.99E+01	3.44E-05	1.35E+02	3.19E-07	1.35E+02
TH-232	2.70E+01	1.06E-05	0.00E+00	2.95E-03	2.95E-03	1.40E-05	0.00E+00	3.89E-03	3.89E-03
U-233	1.00E-01	5.96E-08	0.00E+00	5.77E-01	5.77E-01	7.29E-08	0.00E+00	7.06E-01	7.06E-01
U-235	5.11E+01	5.87E-06	0.00E+00	1.13E-02	1.13E-02	8.59E-06	0.00E+00	1.65E-02	1.65E-02
U-238	1.26E+02	2.42E-05	0.00E+00	8.12E-03	8.12E-03	3.42E-05	0.00E+00	1.15E-02	1.15E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.10E+05	1.40E+05
	Subtotal	2.10E+05	1.40E+05

2	1	**156**	**ID-AEO-101**	**101**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.93E+01	9.23E-07	5.72E+01	7.65E-07	5.72E+01	1.31E-06	8.10E+01	1.08E-06	8.10E+01
U-235	9.30E+00	8.20E-06	0.00E+00	1.58E-02	1.58E-02	1.12E-05	0.00E+00	2.16E-02	2.16E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.10E+04	1.50E+04
	Subtotal	2.10E+04	1.50E+04

2	1	**297**	**ID-AEO-102**	**102**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	5.82E-02	6.31E-08	3.91E+00	5.23E-08	3.91E+00	8.10E-08	5.02E+00	6.71E-08	5.02E+00
PU-240	7.80E-03	1.30E-08	2.95E+00	1.34E-06	2.95E+00	1.68E-08	3.81E+00	1.73E-06	3.81E+00
TH-232	1.00E+01	7.87E-06	0.00E+00	2.19E-03	2.19E-03	1.04E-05	0.00E+00	2.89E-03	2.89E-03
U-235	2.65E+01	3.44E-05	0.00E+00	6.61E-02	6.61E-02	4.33E-05	0.00E+00	8.32E-02	8.32E-02
U-238	5.61E+02	2.38E-04	0.00E+00	7.98E-02	7.98E-02	3.07E-04	0.00E+00	1.03E-01	1.03E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.00E+03	2.30E+03
	Subtotal	3.00E+03	2.30E+03

2	1	**206**	**ID-AEO-104**	**104**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	2.84E-01	3.37E-08	2.09E+00	2.79E-08	2.09E+00	5.52E-08	3.42E+00	4.57E-08	3.42E+00
PU-240	9.35E-03	1.21E-07	2.75E+01	1.25E-05	2.75E+01	1.61E-07	3.66E+01	1.66E-05	3.66E+01
U-235	1.85E+02	2.22E-05	0.00E+00	4.27E-02	4.27E-02	3.64E-05	0.00E+00	7.00E-02	7.00E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	8.40E+03	5.10E+03
	Subtotal	8.40E+03	5.10E+03

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	308	ID-AEO-105T	105	ID-AEO-105T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	7.60E-02	1.01E-06	6.28E+01	8.40E-07	6.28E+01	2.56E-06	1.59E+02	2.13E-06	1.59E+02
PU-240	1.04E-02	1.39E-07	3.14E+01	1.43E-05	3.14E+01	3.51E-07	7.95E+01	3.61E-05	7.95E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.50E+01	3.00E+01
	Subtotal	7.50E+01	3.00E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	310	ID-AEO-107T	107	ID-AEO-107T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	5.80E-01	4.24E-07	2.63E+01	3.52E-07	2.63E+01	6.38E-07	3.96E+01	5.29E-07	3.96E+01
PU-240	6.44E-02	4.71E-08	1.07E+01	4.86E-06	1.07E+01	7.09E-08	1.61E+01	7.30E-06	1.61E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+03	9.10E+02
	Subtotal	1.40E+03	9.10E+02

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	300	ID-ANL-161	161

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
AM-241	1.50E-03	1.36E-08	4.56E+01	8.18E-09	4.56E+01	1.88E-08	6.31E+01	1.13E-08	6.31E+01
PU-239	1.60E-01	6.43E-07	3.99E+01	5.33E-07	3.99E+01	9.24E-07	5.73E+01	7.65E-07	5.73E+01
U-235	3.18E-01	2.29E-06	0.00E+00	4.40E-03	4.40E-03	3.40E-06	0.00E+00	6.53E-03	6.53E-03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.50E+02	1.70E+02
	Subtotal	2.50E+02	1.70E+02

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	314	ID-ANL-162T	162	ID-ANL-162T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	4.00E-02	5.71E-07	3.54E+01	4.74E-07	3.54E+01	8.45E-07	5.24E+01	7.01E-07	5.24E+01
U-235	9.00E-01	1.29E-05	0.00E+00	2.47E-02	2.47E-02	1.90E-05	0.00E+00	3.66E-02	3.66E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.00E+01	4.70E+01
	Subtotal	7.00E+01	4.70E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	158	ID-BCO-201	201

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.24E+01	4.63E-07	2.87E+01	3.83E-07	2.87E+01	6.38E-07	3.95E+01	5.28E-07	3.95E+01
U-235	1.30E+02	1.67E-05	0.00E+00	3.21E-02	3.21E-02	2.19E-05	0.00E+00	4.21E-02	4.21E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.70E+04	1.90E+04
	Subtotal	2.70E+04	1.90E+04

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	301	ID-BCO-202	202

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.20E+00	6.31E-07	3.92E+01	5.23E-07	3.92E+01	1.22E-06	7.59E+01	1.01E-06	7.59E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.90E+03	9.80E+02
	Subtotal	1.90E+03	9.80E+02

2	1	302	ID-BCO-203	203

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	8.00E-01	5.35E-07	3.31E+01	4.43E-07	3.31E+01	9.05E-07	5.61E+01	7.50E-07	5.61E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.50E+03	8.80E+02
	Subtotal	1.50E+03	8.80E+02

2	1	303	ID-BCO-204	204

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	5.00E-01	1.01E-06	6.24E+01	8.34E-07	6.24E+01	1.11E-06	6.86E+01	9.17E-07	6.86E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	5.00E+02	4.50E+02
	Subtotal	5.00E+02	4.50E+02

2	1	72	ID-BTO-010	10

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
TH-232	1.16E+07	1.68E-01	0.00E+00	4.66E+01	4.66E+01	2.28E-01	0.00E+00	6.34E+01	6.34E+01
U-233	4.13E+04	5.92E-04	0.00E+00	5.73E+03	5.73E+03	8.06E-04	0.00E+00	7.80E+03	7.80E+03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.00E+04	5.10E+04
	Subtotal	7.00E+04	5.10E+04

2	1	142	ID-BTO-020	20

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
TH-232	2.29E+06	4.04E-02	0.00E+00	1.12E+01	1.12E+01	5.11E-02	0.00E+00	1.42E+01	1.42E+01
U-233	7.63E+03	1.35E-04	0.00E+00	1.31E+03	1.31E+03	1.71E-04	0.00E+00	1.65E+03	1.65E+03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	5.70E+04	4.50E+04
	Subtotal	5.70E+04	4.50E+04

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	34	ID-BTO-030	30

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.56E-01	2.78E-07	1.72E+01	2.30E-07	1.72E+01	2.78E-07	1.72E+01	2.30E-07	1.72E+01
TH-232	1.07E+06	2.18E-01	0.00E+00	6.06E+01	6.06E+01	2.77E-01	0.00E+00	7.69E+01	7.69E+01
U-233	6.14E+03	1.12E-03	0.00E+00	1.08E+04	1.08E+04	1.38E-03	0.00E+00	1.34E+04	1.34E+04

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	5.50E+03	4.40E+03
	Subtotal	5.50E+03	4.40E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	213	ID-BTO-040T	40

ID-BTO-040T is currently classified as TRUMW. The only radionuclide reported in TWDB for this wastestream is Th-232 and U-233. Since thorium and uranium have atomic numbers of 90 and 92 respectively, they are not usually considered to be transuranium radionuclides, as defined in DOE Order 5820.2A. Since the TRU alpha activity concentration is less than 100 nCi/g. this wastestream may be mixed ALLW.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
TH-232	8.09E+06	3.11E-01	0.00E+00	8.64E+01	8.64E+01	3.91E-01	0.00E+00	1.09E+02	1.09E+02
U-233	3.59E+04	9.45E-04	0.00E+00	9.15E+03	9.15E+03	1.15E-03	0.00E+00	1.11E+04	1.11E+04

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.80E+04	3.10E+04
	Subtotal	3.80E+04	3.10E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	299	ID-CPP-156	156

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	4.70E+00	4.32E-07	2.68E+01	3.58E-07	2.68E+01	4.32E-07	2.68E+01	3.58E-07	2.68E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.10E+04	1.10E+04
	Subtotal	1.10E+04	1.10E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	188	ID-INL-150	150

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.90E+00	2.78E-08	1.72E+00	2.30E-08	1.72E+00	2.78E-08	1.72E+00	2.30E-08	1.72E+00
U-235	8.98E+02	1.30E-05	0.00E+00	2.50E-02	2.50E-02	1.30E-05	0.00E+00	2.51E-02	2.51E-02
U-238	2.59E+03	2.85E-03	0.00E+00	9.59E-01	9.59E-01	4.23E-03	0.00E+00	1.42E+00	1.42E+00

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	6.90E+04	6.90E+04
	Subtotal	6.90E+04	6.90E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	298	ID-INL-155	155

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	5.82E-03	1.06E-08	6.56E-01	8.77E-09	6.56E-01	1.15E-08	7.15E-01	9.56E-09	7.15E-01
PU-242	7.88E-03	1.43E-08	5.63E-02	1.33E-10	5.63E-02	1.56E-08	6.13E-02	1.45E-10	6.13E-02
TH-232	1.04E+04	5.75E-02	0.00E+00	1.60E+01	1.60E+01	6.58E-02	0.00E+00	1.83E+01	1.83E+01
U-233	3.62E+01	1.19E-04	0.00E+00	1.15E+03	1.15E+03	1.40E-04	0.00E+00	1.36E+03	1.36E+03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	8.50E+02	7.60E+02
	Subtotal	8.50E+02	7.60E+02

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	146	ID-MDO-803	803	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	160	ID-MDO-824	824

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.00E-01	4.79E-08	2.97E+00	3.97E-08	2.97E+00	4.79E-08	2.97E+00	3.97E-08	2.97E+00

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.10E+03	2.10E+03
	Subtotal	2.10E+03	2.10E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	77	ID-MDO-826	826	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	89	ID-MDO-827T	827	ID-MDO-827T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	1.00E-01	1.05E-06	6.51E+01	8.70E-07	6.51E+01	1.38E-06	8.54E+01	1.14E-06	8.54E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	9.50E+01	7.30E+01
	Subtotal	9.50E+01	7.30E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	58	ID-MDO-834	834	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	59	ID-MDO-835	835

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.64E-01	9.43E-07	7.52E+01	3.96E-03	7.52E+01	1.20E-06	9.61E+01	5.05E-03	9.61E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.80E+02	2.20E+02
	Subtotal	2.80E+02	2.20E+02

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	60	ID-MDO-836	836

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-83	4.44E-02	6.04E-09	7.68E+01	4.19E-03	7.68E+01	6.79E-09	8.64E+01	4.72E-03	8.64E+01
U-235	1.20E+01	9.52E-05	0.00E+00	1.83E-01	1.83E-01	1.49E-04	0.00E+00	2.86E-01	2.86E-01
U-238	4.60E+03	3.65E-02	0.00E+00	1.23E+01	1.23E+01	5.70E-02	0.00E+00	1.92E+01	1.92E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.50E+03	6.60E+03
	Subtotal	7.50E+03	6.60E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	304	ID-MDO-838	838	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	191	ID-MDO-842	842	No alpha activity data is available for this waste stream.

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	305	ID-MDO-847	847	No alpha activity data is available for this waste stream.
2	1	306	ID-MDO-848	848	No alpha activity data is available for this waste stream.
2	1	29	ID-OFS-111	111	

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
AM-241	2.03E-01	1.21E-08	4.06E+01	7.27E-09	4.06E+01	1.42E-08	4.75E+01	8.51E-09	4.75E+01
PU-239	1.00E-02	1.45E-07	8.99E+00	1.20E-07	8.99E+00	2.16E-07	1.34E+01	1.79E-07	1.34E+01
PU-52	2.63E+01	6.58E-07	5.25E+01	2.76E-03	5.25E+01	7.83E-07	6.24E+01	3.28E-03	6.24E+01
U-233	1.43E+00	2.07E-05	0.00E+00	2.01E+02	2.01E+02	3.09E-05	0.00E+00	2.99E+02	2.99E+02
U-235	6.70E+01	4.30E-05	0.00E+00	8.26E-02	8.26E-02	5.96E-05	0.00E+00	1.15E-01	1.15E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.00E+04	3.40E+04
	Subtotal	4.00E+04	3.40E+04

2	1	157	ID-OFS-121	121

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.70E-03	3.86E-08	3.08E+00	1.62E-04	3.08E+00	1.25E-07	9.97E+00	5.24E-04	9.97E+00

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.40E+01	1.40E+01
	Subtotal	4.40E+01	1.40E+01

2	1	293	ID-RFO-000	0

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	3.20E+00	7.77E-07	4.82E+01	6.44E-07	4.82E+01	1.01E-06	6.28E+01	8.39E-07	6.28E+01
PU-52	1.58E+01	5.58E-07	4.45E+01	2.34E-03	4.45E+01	7.49E-07	5.98E+01	3.14E-03	5.98E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.20E+04	2.40E+04
	Subtotal	3.20E+04	2.40E+04

2	1	28	ID-RFO-001	1

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	5.51E+00	6.66E-07	5.32E+01	2.80E-03	5.32E+01	7.54E-07	6.02E+01	3.16E-03	6.02E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	8.30E+03	7.30E+03
	Subtotal	8.30E+03	7.30E+03

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	31	ID-RFO-002	2

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.98E+02	1.02E-06	8.14E+01	4.28E-03	8.14E+01	1.13E-06	9.02E+01	4.75E-03	9.02E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	6.80E+05	6.20E+05
	Subtotal	6.80E+05	6.20E+05

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	235	ID-RFO-003	3

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.84E+02	6.04E-07	4.82E+01	2.53E-03	4.82E+01	6.72E-07	5.36E+01	2.82E-03	5.36E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.10E+05	2.70E+05
	Subtotal	3.10E+05	2.70E+05

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	57	ID-RFO-004	4

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.06E+01	6.48E-07	5.17E+01	2.72E-03	5.17E+01	7.17E-07	5.72E+01	3.01E-03	5.72E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	9.40E+04	8.50E+04
	Subtotal	9.40E+04	8.50E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	223	ID-RFO-005	5

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	5.00E-01	3.12E-07	2.49E+01	1.31E-03	2.49E+01	3.64E-07	2.90E+01	1.53E-03	2.90E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.60E+03	1.40E+03
	Subtotal	1.60E+03	1.40E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	35	ID-RFO-007	7

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
AM-241	1.28E-02	1.24E-10	4.16E-01	7.45E-11	4.16E-01	1.38E-10	4.63E-01	8.30E-11	4.63E-01
PU-52	7.72E+01	7.31E-07	5.83E+01	3.07E-03	5.83E+01	8.15E-07	6.50E+01	3.42E-03	6.50E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.10E+05	9.50E+04
	Subtotal	1.10E+05	9.50E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	192	ID-RFO-090	90	No alpha activity data is available for this waste stream.

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	55	ID-RFO-112	112

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	7.54E-01	1.75E-07	1.40E+01	7.34E-04	1.40E+01	2.11E-07	1.68E+01	8.84E-04	1.68E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.30E+03	3.60E+03
	Subtotal	4.30E+03	3.60E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	30	ID-RFO-113	113

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.92E-01	1.93E-07	1.54E+01	8.10E-04	1.54E+01	2.15E-07	1.72E+01	9.02E-04	1.72E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.60E+03	3.20E+03
	Subtotal	3.60E+03	3.20E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	56	ID-RFO-114	114

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.13E+00	6.91E-07	5.51E+01	2.90E-03	5.51E+01	8.50E-07	6.78E+01	3.57E-03	6.78E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.10E+03	2.50E+03
	Subtotal	3.10E+03	2.50E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	73	ID-RFO-116	116

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.30E+01	2.39E-07	1.91E+01	1.00E-03	1.91E+01	3.33E-07	2.65E+01	1.40E-03	2.65E+01
U-235	1.46E+02	8.84E-06	0.00E+00	1.70E-02	1.70E-02	1.20E-05	0.00E+00	2.31E-02	2.31E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	9.60E+04	6.90E+04
	Subtotal	9.60E+04	6.90E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	141	ID-RFO-117	117

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.50E+01	2.26E-07	1.80E+01	9.47E-04	1.80E+01	2.72E-07	2.17E+01	1.14E-03	2.17E+01
U-235	2.20E+01	4.04E-06	0.00E+00	7.77E-03	7.77E-03	4.85E-06	0.00E+00	9.32E-03	9.32E-03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	6.60E+04	5.50E+04
	Subtotal	6.60E+04	5.50E+04

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	120	ID-RFO-118	118

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.27E-01	1.75E-07	1.39E+01	7.33E-04	1.39E+01	2.15E-07	1.72E+01	9.02E-04	1.72E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.60E+03	2.90E+03
	Subtotal	3.60E+03	2.90E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	102	ID-RFO-119	119

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	3.22E+00	1.79E-07	1.43E+01	7.51E-04	1.43E+01	2.75E-07	2.19E+01	1.15E-03	2.19E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.80E+04	1.20E+04
	Subtotal	1.80E+04	1.20E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	93	ID-RFO-122	122

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.57E+00	1.71E-07	1.36E+01	7.17E-04	1.36E+01	2.10E-07	1.67E+01	8.80E-04	1.67E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	9.20E+03	7.50E+03
	Subtotal	9.20E+03	7.50E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	129	ID-RFO-123	123

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.63E-01	1.41E-07	1.12E+01	5.91E-04	1.12E+01	1.98E-07	1.58E+01	8.32E-04	1.58E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.20E+03	8.20E+02
	Subtotal	1.20E+03	8.20E+02

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	159	ID-RFO-241	241	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	32	ID-RFO-290	290	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	33	ID-RFO-292	292

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.58E-01	1.87E-07	1.49E+01	7.83E-04	1.49E+01	2.08E-07	1.66E+01	8.74E-04	1.66E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+03	1.20E+03
	Subtotal	1.40E+03	1.20E+03

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	171	ID-RFO-300	300

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	4.98E-02	1.35E-07	1.08E+01	5.66E-04	1.08E+01	1.79E-07	1.43E+01	7.51E-04	1.43E+01
U-233	1.90E+01	1.52E-04	0.00E+00	1.47E+03	1.47E+03	1.85E-04	0.00E+00	1.79E+03	1.79E+03

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.90E+02	3.80E+02
	Subtotal	4.90E+02	3.80E+02

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	172	ID-RFO-301	301	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	51	ID-RFO-302	302

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	7.56E+00	2.51E-07	2.00E+01	1.05E-03	2.00E+01	2.99E-07	2.38E+01	1.25E-03	2.38E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.00E+04	2.50E+04
	Subtotal	3.00E+04	2.50E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	178	ID-RFO-312T	312	ID-RFO-312T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.40E-03	9.85E-08	7.85E+00	4.13E-04	7.85E+00	1.51E-07	1.21E+01	6.34E-04	1.21E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	6.50E+01	4.20E+01
	Subtotal	6.50E+01	4.20E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	143	ID-RFO-320	320

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.27E-01	1.62E-07	1.29E+01	6.80E-04	1.29E+01	1.97E-07	1.57E+01	8.27E-04	1.57E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+03	1.20E+03
	Subtotal	1.40E+03	1.20E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	104	ID-RFO-328	328	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	74	ID-RFO-330	330

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.06E+02	1.90E-07	1.52E+01	7.99E-04	1.52E+01	2.81E-07	2.24E+01	1.18E-03	2.24E+01
U-233	9.00E+00	4.55E-05	0.00E+00	4.41E+02	4.41E+02	6.94E-05	0.00E+00	6.72E+02	6.72E+02
U-235	9.89E+02	3.97E-05	0.00E+00	7.63E-02	7.63E-02	6.11E-05	0.00E+00	1.18E-01	1.18E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	5.60E+05	3.80E+05
	Subtotal	5.60E+05	3.80E+05

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	105	ID-RFO-335	335

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.42E-02	1.04E-07	8.27E+00	4.35E-04	8.27E+00	1.55E-07	1.24E+01	6.50E-04	1.24E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+02	9.20E+01
	Subtotal	1.40E+02	9.20E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	75	ID-RFO-336	336

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.01E+00	2.97E-07	2.37E+01	1.24E-03	2.37E+01	4.50E-07	3.59E+01	1.89E-03	3.59E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.00E+04	1.30E+04
	Subtotal	2.00E+04	1.30E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	76	ID-RFO-337	337

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.00E-01	1.56E-07	1.24E+01	6.54E-04	1.24E+01	2.21E-07	1.76E+01	9.25E-04	1.76E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	3.80E+03	2.70E+03
	Subtotal	3.80E+03	2.70E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	106	ID-RFO-338	338

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.06E+01	1.67E-07	1.33E+01	6.99E-04	1.33E+01	2.43E-07	1.94E+01	1.02E-03	1.94E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	6.40E+04	4.40E+04
	Subtotal	6.40E+04	4.40E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	130	ID-RFO-339	339	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	107	ID-RFO-360	360	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	94	ID-RFO-371	371

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
AM-241	1.00E-04	8.23E-12	2.75E-02	4.94E-12	2.75E-02	1.14E-11	3.82E-02	6.85E-12	3.82E-02
PU-52	2.15E+00	1.66E-07	1.32E+01	6.94E-04	1.32E+01	2.29E-07	1.82E+01	9.58E-04	1.82E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.30E+04	9.40E+03
	Subtotal	1.30E+04	9.40E+03

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	190	ID-RFO-374	374

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
AM-241	4.00E-03	6.99E-11	2.34E-01	4.19E-11	2.34E-01	8.66E-11	2.90E-01	5.19E-11	2.90E-01
PU-52	1.21E+01	1.64E-07	1.31E+01	6.89E-04	1.31E+01	2.00E-07	1.59E+01	8.38E-04	1.59E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.40E+04	6.10E+04
	Subtotal	7.40E+04	6.10E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	95	ID-RFO-375	375

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.80E-02	1.64E-07	1.31E+01	6.86E-04	1.31E+01	2.06E-07	1.64E+01	8.65E-04	1.64E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.10E+02	8.70E+01
	Subtotal	1.10E+02	8.70E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	108	ID-RFO-376	376

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.77E+00	1.30E-07	1.03E+01	5.44E-04	1.03E+01	1.99E-07	1.59E+01	8.36E-04	1.59E+01
U-235	4.00E+00	7.69E-05	0.00E+00	1.48E-01	1.48E-01	1.85E-04	0.00E+00	3.56E-01	3.56E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+04	8.90E+03
	Subtotal	1.40E+04	8.90E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	217	ID-RFO-430	430	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	218	ID-RFO-431	431	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	219	ID-RFO-432	432

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.30E-02	1.37E-07	1.09E+01	5.74E-04	1.09E+01	1.80E-07	1.43E+01	7.54E-04	1.43E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	9.50E+01	7.20E+01
	Subtotal	9.50E+01	7.20E+01

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	121	ID-RFO-440	440

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	4.01E-01	2.03E-07	1.62E+01	8.51E-04	1.62E+01	2.45E-07	1.95E+01	1.03E-03	1.95E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.00E+03	1.60E+03
	Subtotal	2.00E+03	1.60E+03

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	122	ID-RFO-441	441	No alpha activity data is available for this waste stream.

2	1	123	ID-RFO-442	442

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.10E-01	2.50E-07	1.99E+01	1.05E-03	1.99E+01	3.18E-07	2.54E+01	1.33E-03	2.54E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	8.40E+02	6.60E+02
	Subtotal	8.40E+02	6.60E+02

2	1	131	ID-RFO-463	463	No alpha activity data is available for this waste stream.

2	1	52	ID-RFO-464	464	No alpha activity data is available for this waste stream.

2	1	144	ID-RFO-480	480

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	4.04E+02	2.17E-07	1.73E+01	9.11E-04	1.73E+01	2.80E-07	2.23E+01	1.17E-03	2.23E+01
U-233	2.40E+02	1.11E-04	0.00E+00	1.08E+03	1.08E+03	1.51E-04	0.00E+00	1.46E+03	1.46E+03
U-235	6.00E+00	4.27E-06	0.00E+00	8.21E-03	8.21E-03	5.33E-06	0.00E+00	1.03E-02	1.03E-02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.90E+06	1.40E+06
	Subtotal	1.90E+06	1.40E+06

2	1	145	ID-RFO-481	481

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	8.31E+00	1.74E-07	1.39E+01	7.29E-04	1.39E+01	2.26E-07	1.80E+01	9.46E-04	1.80E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.80E+04	3.70E+04
	Subtotal	4.80E+04	3.70E+04

2	1	109	ID-RFO-490	490

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	6.85E+01	3.13E-07	2.49E+01	1.31E-03	2.49E+01	4.58E-07	3.65E+01	1.92E-03	3.65E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.20E+05	1.50E+05
	Subtotal	2.20E+05	1.50E+05

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	78	ID-RFO-900	900

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	2.00E-01	1.67E-07	1.33E+01	6.99E-04	1.33E+01	2.18E-07	1.74E+01	9.13E-04	1.74E+01
U-238	9.00E+03	3.69E-02	0.00E+00	1.24E+01	1.24E+01	5.11E-02	0.00E+00	1.72E+01	1.72E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+03	1.10E+03
	Subtotal	1.40E+03	1.10E+03

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	161	ID-RFO-950	950

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	1.18E+01	1.56E-07	1.24E+01	6.53E-04	1.24E+01	1.94E-07	1.55E+01	8.12E-04	1.55E+01
U-238	1.90E+04	4.45E-02	0.00E+00	1.49E+01	1.49E+01	5.65E-02	0.00E+00	1.90E+01	1.90E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	7.60E+04	6.10E+04
	Subtotal	7.60E+04	6.10E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	79	ID-RFO-970	970

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	3.80E+00	1.53E-07	1.22E+01	6.42E-04	1.22E+01	2.10E-07	1.68E+01	8.82E-04	1.68E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.50E+04	1.80E+04
	Subtotal	2.50E+04	1.80E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	61	ID-RFO-976	976

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	7.00E-01	4.18E-08	3.33E+00	1.75E-04	3.33E+00	4.74E-08	3.78E+00	1.99E-04	3.78E+00

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.70E+04	1.50E+04
	Subtotal	1.70E+04	1.50E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code
2	1	62	ID-RFO-978	978

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	3.40E+00	2.18E-07	1.74E+01	9.12E-04	1.74E+01	2.54E-07	2.03E+01	1.07E-03	2.03E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.60E+04	1.30E+04
	Subtotal	1.60E+04	1.30E+04

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	193	ID-RFO-990	990	No alpha activity data is available for this waste stream.

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	294	ID-RFO-9999	9999	No alpha activity data is available for this waste stream.

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	1	240	ID-TAN-162	*	No alpha activity data is available for this waste stream.
2	1	241	ID-TAN-163	*	No alpha activity data is available for this waste stream.
2	1	779	LB-W011	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.
2	1	774	LB-W012	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.
2	1	780	LB-W014	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.
2	1	781	LB-W017	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.
2	1	782	LB-W018	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.
2	1	783	LB-W019	*	No storage (volume, mass) or alpha activity information is available for this waste stream as of this report date.

1. The TRU alpha activity concentration reported in this section consists of alpha-emitting transuranium radionuclides (a radionuclide having an atomic number greater than 92 and half-life greater than 20 years). All transuranium decay chain progeny classified as TRU are included. All activity calculations are based on a 15 year post purification date or decay date. Fifteen years is a representative waste age average.

2. Subtotal values may not agree with those reported in the storage section since values in this table are based on stored waste quantities for which radiological data are available.

3. Pu-52 and Pu-83 are database nomenclature for weapons grade plutonium (WG Pu) and heat source plutonium (HS Pu), respectively. See Section 4.1 Table 4-6 for the nominal isotopic compositions.

4. Gross Mass=Container mass+waste mass. Waste Mass = Mass of Waste only.

End of category 2 mixed waste 1

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
Mixed waste = 2					
2	2	**764**	**CH-ANL-RDA**	*	No alpha activity data is available for this waste stream.
2	2	**214**	**ID-BTO-012TN**	**12**	ID-BTO-012TN is currently classified as TRUW. The only radionuclide reported in TWDB for this wastestream is Ra-226. Since radium has an atomic number of 88 it is not usually considered to be a transuranium radionuclide, as defined in DOE Order 5820.2A. Since the TRU alpha activity concentration is less than 100 nCi/g this wastestream may be ALLW.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
RA-226	4.86E-02	3.04E-07	0.00E+00	6.81E+02	6.81E+02	3.75E-07	0.00E+00	8.41E+02	8.41E+02

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.60E+02	1.30E+02
	Subtotal	1.60E+02	1.30E+02

2	2	**154**	**ID-BTO-081TN**	**81**	ID-BTO-081TN is currently classified as TRUW. The only radionuclide reported in TWDB for this wastestream is Th-232 and U-233. Since thorium and uranium have atomic numbers of 90 and 92 respectively, they are not usually considered to be transuranium radionuclides, as defined in DOE Order 5820.2A. Since the TRU alpha activity concentration is less than 100 nCi/g. this wastestream may be ALLW.

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
TH-232	1.06E+05	7.79E-02	0.00E+00	2.17E+01	2.17E+01	1.26E-01	0.00E+00	3.49E+01	3.49E+01
U-233	2.74E+03	2.02E-03	0.00E+00	1.95E+04	1.95E+04	3.25E-03	0.00E+00	3.15E+04	3.15E+04

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.40E+03	8.40E+02
	Subtotal	1.40E+03	8.40E+02

2	2	**207**	**ID-INL-153N**	**153**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	4.00E-01	9.46E-07	5.86E+01	7.84E-07	5.86E+01	9.46E-07	5.86E+01	7.84E-07	5.86E+01
U-235	2.24E+02	1.90E-04	0.00E+00	3.65E-01	3.65E-01	2.81E-04	0.00E+00	5.40E-01	5.40E-01
U-238	1.50E+02	7.14E-04	0.00E+00	2.40E-01	2.40E-01	7.14E-04	0.00E+00	2.40E-01	2.40E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	1.20E+03	8.00E+02
	Subtotal	1.20E+03	8.00E+02

2	2	**162**	**ID-MDO-825N**	**825**

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-239	4.00E-01	1.31E-06	8.13E+01	1.09E-06	8.13E+01	1.42E-06	8.79E+01	1.17E-06	8.79E+01
PU-52	1.32E-01	1.10E-06	8.78E+01	4.61E-03	8.78E+01	1.47E-06	1.18E+02	6.18E-03	1.18E+02
U-235	3.00E+00	7.69E-05	0.00E+00	1.48E-01	1.48E-01	1.84E-04	0.00E+00	3.54E-01	3.54E-01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.60E+02	3.90E+02
	Subtotal	4.60E+02	3.90E+02

2	2	**36**	**ID-RFO-095**	**95**	No alpha activity data is available for this waste stream.

Table 4. INEL alpha low level mixed and non-mixed radiological alpha activity information. 9/16/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	
2	2	173	ID-RFO-115N	115	

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	5.05E-02	1.23E-07	9.80E+00	5.15E-04	9.80E+00	1.95E-07	1.56E+01	8.18E-04	1.56E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	4.10E+02	2.60E+02
	Subtotal	4.10E+02	2.60E+02

2	2	174	ID-RFO-310N	310	No alpha activity data is available for this waste stream.
2	2	175	ID-RFO-370N	370	No alpha activity data is available for this waste stream.
2	2	189	ID-RFO-372N	372	No alpha activity data is available for this waste stream.
2	2	194	ID-RFO-425N	425	No alpha activity data is available for this waste stream.
2	2	96	ID-RFO-960N	960	

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	4.40E+00	1.79E-07	1.42E+01	7.49E-04	1.42E+01	1.83E-07	1.46E+01	7.67E-04	1.46E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.50E+04	2.40E+04
	Subtotal	2.50E+04	2.40E+04

2	2	37	ID-RFO-995N	995

Isotopic Composition Profile

Major Nuclide / Pu Mix	Nuclide / Pu Mix Mass (g)	Nuclide / Pu Mix Mass per Gross Mass (g/g)	TRU Alpha Activity per Gross Mass (nCi/g)	Non-TRU Alpha Activity per Gross Mass (nCi/g)	Total Alpha Activity per Gross Mass (nCi/g)	Nuclide / Pu Mix Mass per Waste Mass (g/g)	TRU Alpha Activity per Waste Mass (nCi/g)	Non-TRU Alpha Activity per Waste Mass (nCi/g)	Total Alpha Activity per Waste Mass (nCi/g)
PU-52	7.40E+00	3.65E-07	2.91E+01	1.53E-03	2.91E+01	4.24E-07	3.38E+01	1.78E-03	3.38E+01

Alpha activity concentration profile (Notes: 1,2,3,4)

Interval number	TRU alpha activity concentration	Interval gross mass (kg)	Interval waste mass (kg)
0	nCi/g < 100	2.00E+04	1.70E+04
	Subtotal	2.00E+04	1.70E+04

2	2	208	ID-TRA-154N	154	No alpha activity data is available for this waste stream.

1. The TRU alpha activity concentration reported in this section consists of alpha-emitting transuranium radionuclides (a radionuclide having an atomic number greater than 92 and half-life greater than 20 years). All transuranium decay chain progeny classified as TRU are included. All activity calculations are based on a 15 year post purification date or decay date. Fifteen years is a representative waste age average.
2. Subtotal values may not agree with those reported in the storage section since values in this table are based on stored waste quantities for which radiological data are available.
3. Pu-52 and Pu-83 are database nomenclature for weapons grade plutonium (WG Pu) and heat source plutonium (HS Pu), respectively. See Section 4.1 Table 4-6 for the nominal isotopic compositions.
4. Gross Mass=Container mass+waste mass. Waste Mass = Mass of Waste only.

End of category 2 mixed waste 2

Table 5. INEL alpha low level mixed waste hazardous contaminant information. 9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
Mixed waste = 1											
2	1	155	ID-AEO-100	100	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			2
2	1	155	ID-AEO-100	100	F003E	F003	Spent non-halogenated solvents	Ethyl ether	60-29-7		1
2	1	156	ID-AEO-101	101	D008A	D008	Lead	.	7439-92-1	5	10
2	1	156	ID-AEO-101	101	D008C	D008	Lead	Radioactive lead solids	64083-05-2	5	10
2	1	297	ID-AEO-102	102	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	297	ID-AEO-102	102	UNKW		See Default Profile Sheet				
2	1	206	ID-AEO-104	104	D008A	D008	Lead	.	7439-92-1		10
2	1	300	ID-ANL-161	161	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	300	ID-ANL-161	161	UNKW		See Default Profile Sheet				
2	1	158	ID-BCO-201	201	D008C	D008	Lead	Radioactive lead solids	64083-05-2	5	10
2	1	301	ID-BCO-202	202	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	301	ID-BCO-202	202	UNKW		See Default Profile Sheet				
2	1	302	ID-BCO-203	203	D008A	D008	LEAD		7439-92-1	0.2	1
2	1	302	ID-BCO-203	203	F002F	F002	SPENT HALOGENATED SOLVENTS	METHYLENE CHLORIDE	75-9-2	0.02	1
2	1	302	ID-BCO-203	203	F003I	F003	SPENT NON-HALOGENTAED SOLVENTS	XYLENES (TOTAL)	1330-20-7	0.005	1
2	1	302	ID-BCO-203	203	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	303	ID-BCO-204	204	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	303	ID-BCO-204	204	UNKW		See Default Profile Sheet				
2	1	72	ID-BTO-010	10	F001A	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,1-TRICHLOROETHANE	71-55-6	0.2	1
2	1	72	ID-BTO-010	10	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	72	ID-BTO-010	10	F001C	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	CARBON TETRACHLORIDE	56-23-5	0.075	1
2	1	72	ID-BTO-010	10	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	142	ID-BTO-020	20	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems		0.1	1
2	1	142	ID-BTO-020	20	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.008	1
2	1	142	ID-BTO-020	20	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.02	1
2	1	34	ID-BTO-030	30	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.001	1
2	1	34	ID-BTO-030	30	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.001	1
2	1	299	ID-CPP-156	156	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	299	ID-CPP-156	156	UNKW		See Default Profile Sheet				
2	1	188	ID-INL-150	150	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	188	ID-INL-150	150	D008A	D008	Lead	.	7439-92-1	0.2	1
2	1	298	ID-INL-155	155	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	298	ID-INL-155	155	UNKW		See Default Profile Sheet				
2	1	146	ID-MDO-803	803	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6	0.3	1
2	1	146	ID-MDO-803	803	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	160	ID-MDO-824	824	D005A	D005	Barium	.	7440-39-3		1
2	1	160	ID-MDO-824	824	D006A	D006	Cadmium	.	7440-43-9		1
2	1	160	ID-MDO-824	824	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	160	ID-MDO-824	824	D008A	D008	Lead	.	7439-92-1		1
2	1	160	ID-MDO-824	824	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	160	ID-MDO-824	824	D010A	D010	Selenium	.	7782-49-2		1
2	1	160	ID-MDO-824	824	D011A	D011	Silver	.	7440-22-4		1
2	1	77	ID-MDO-826	826	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6	0.4	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	77	ID-MDO-826	826	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	58	ID-MDO-834	834	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	58	ID-MDO-834	834	D002F	D002	Corrosive	Corrosive characteristic wastes that are managed in CWA, CWA equivalent, or Class I SDWA system		38	60
2	1	59	ID-MDO-835	835	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems		30	60
2	1	60	ID-MDO-836	836	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	60	ID-MDO-836	836	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	60	ID-MDO-836	836	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	60	ID-MDO-836	836	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	60	ID-MDO-836	836	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	60	ID-MDO-836	836	D010A	D010	Selenium	.	7782-49-2		1
2	1	60	ID-MDO-836	836	D011A	D011	Silver	.	7440-22-4		1
2	1	60	ID-MDO-836	836	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	60	ID-MDO-836	836	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.008	1
2	1	60	ID-MDO-836	836	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6	0.01	1
2	1	60	ID-MDO-836	836	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	60	ID-MDO-836	836	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	304	ID-MDO-838	838	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	304	ID-MDO-838	838	UNKW		See Default Profile Sheet				
2	1	191	ID-MDO-842	842	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	191	ID-MDO-842	842	D006A	D006	Cadmium	.	7440-43-9		1
2	1	191	ID-MDO-842	842	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	191	ID-MDO-842	842	D008A	D008	Lead	.	7439-92-1		1
2	1	191	ID-MDO-842	842	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	191	ID-MDO-842	842	D010A	D010	Selenium	.	7782-49-2		1
2	1	191	ID-MDO-842	842	D011A	D011	Silver	.	7440-22-4		1
2	1	305	ID-MDO-847	847	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	305	ID-MDO-847	847	UNKW		See Default Profile Sheet				
2	1	306	ID-MDO-848	848	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	306	ID-MDO-848	848	UNKW		See Default Profile Sheet				
2	1	29	ID-OFS-111	111	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	29	ID-OFS-111	111	D004A	D004	Arsenic	.	7440-38-2		1
2	1	29	ID-OFS-111	111	D005A	D005	Barium	.	7440-39-3		1
2	1	29	ID-OFS-111	111	D006A	D006	Cadmium	.	7440-43-9	1	2
2	1	29	ID-OFS-111	111	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	29	ID-OFS-111	111	D008A	D008	Lead	.	7439-92-1	1	2
2	1	29	ID-OFS-111	111	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6	1	2
2	1	29	ID-OFS-111	111	D022A	D022	CHLOROFORM	.	67-66-3	0.1	1
2	1	29	ID-OFS-111	111	D028A	D028	1,2-DICHLOROETHANE	.	107-6-2	0.1	1
2	1	29	ID-OFS-111	111	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	1	2
2	1	29	ID-OFS-111	111	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	2
2	1	29	ID-OFS-111	111	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	1	2
2	1	29	ID-OFS-111	111	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4	1	2
2	1	29	ID-OFS-111	111	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6	1	2
2	1	29	ID-OFS-111	111	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	1	2
2	1	29	ID-OFS-111	111	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4	0.001	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	29	ID-OFS-111	111	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	1	1
2	1	29	ID-OFS-111	111	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	1	2
2	1	29	ID-OFS-111	111	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	1	2
2	1	29	ID-OFS-111	111	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3	0.001	1
2	1	157	ID-OFS-121	121	D004A	D004	Arsenic	.	7440-38-2		1
2	1	157	ID-OFS-121	121	D005A	D005	Barium	.	7440-39-3		1
2	1	157	ID-OFS-121	121	D006A	D006	Cadmium	.	7440-43-9		10
2	1	157	ID-OFS-121	121	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	157	ID-OFS-121	121	D008A	D008	Lead	.	7439-92-1		10
2	1	157	ID-OFS-121	121	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	157	ID-OFS-121	121	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	157	ID-OFS-121	121	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	293	ID-RFO-000	0	D002A	D002	CORROSIVE	ACID			1
2	1	293	ID-RFO-000	0	D006A	D006	CADMIUM		7440-43-9	0.001	1
2	1	293	ID-RFO-000	0	D008A	D008	LEAD		7439-92-1	5	10
2	1	293	ID-RFO-000	0	F001A	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,1-TRICHLOROETHANE	71-55-6	0.2	1
2	1	293	ID-RFO-000	0	F001B	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	0.5	1
2	1	293	ID-RFO-000	0	F001C	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	CARBON TETRACHLORIDE	56-23-5	5	10
2	1	293	ID-RFO-000	0	F001E	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TETRACHLOROETHYLENE	127-18-4		1
2	1	293	ID-RFO-000	0	F001F	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TRICHLOROETHYLENE	79-01-6		1
2	1	293	ID-RFO-000	0	F002F	F002	SPENT HALOGENATED SOLVENTS	METHYLENE CHLORIDE	75-9-2	0.1	1
2	1	293	ID-RFO-000	0	F003F	F003	SPENT NON-HALOGENATED SOLVENTS	METHANOL	67-56-1	0.003	1
2	1	293	ID-RFO-000	0	F003H	F003	SPENT NON-HALOGENATED SOLVENTS	N-BUTYL ALCOHOL	71-36-3	0.001	1
2	1	293	ID-RFO-000	0	F003I	F003	SPENT NON-HALOGENATED SOLVENTS	XYLENES (TOTAL)	1330-20-7	0.005	1
2	1	293	ID-RFO-000	0	P015	P015	BERYLLIUM POWDER		7440-41-7	0.1	1
2	1	293	ID-RFO-000	0	TSCAB	TSCA	PCBs		1336-36-3	2	5
2	1	293	ID-RFO-000	0	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents	.			0
2	1	28	ID-RFO-001	1	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	28	ID-RFO-001	1	D005A	D005	Barium	.	7440-39-3		1
2	1	28	ID-RFO-001	1	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	28	ID-RFO-001	1	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	28	ID-RFO-001	1	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	28	ID-RFO-001	1	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	28	ID-RFO-001	1	D011A	D011	Silver	.	7440-22-4		1
2	1	28	ID-RFO-001	1	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	28	ID-RFO-001	1	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	28	ID-RFO-001	1	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.008	1
2	1	28	ID-RFO-001	1	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	28	ID-RFO-001	1	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.003	1
2	1	28	ID-RFO-001	1	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	28	ID-RFO-001	1	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	28	ID-RFO-001	1	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	28	ID-RFO-001	1	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	28	ID-RFO-001	1	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	28	ID-RFO-001	1	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	31	ID-RFO-002	2	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	31	ID-RFO-002	2	D005A	D005	Barium	.	7440-39-3		1
2	1	31	ID-RFO-002	2	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	31	ID-RFO-002	2	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	31	ID-RFO-002	2	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	31	ID-RFO-002	2	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6	2.5	20
2	1	31	ID-RFO-002	2	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	31	ID-RFO-002	2	D011A	D011	Silver	.	7440-22-4		1
2	1	31	ID-RFO-002	2	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	31	ID-RFO-002	2	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	31	ID-RFO-002	2	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	31	ID-RFO-002	2	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	31	ID-RFO-002	2	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.003	1
2	1	31	ID-RFO-002	2	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	31	ID-RFO-002	2	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	31	ID-RFO-002	2	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	31	ID-RFO-002	2	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	31	ID-RFO-002	2	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	31	ID-RFO-002	2	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	235	ID-RFO-003	3	D005A	D005	Barium	.	7440-39-3		1
2	1	235	ID-RFO-003	3	D011A	D011	Silver	.	7440-22-4		1
2	1	235	ID-RFO-003	3	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	15	30
2	1	235	ID-RFO-003	3	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	10
2	1	235	ID-RFO-003	3	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	5	10
2	1	235	ID-RFO-003	3	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	235	ID-RFO-003	3	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	235	ID-RFO-003	3	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	235	ID-RFO-003	3	F004B	F004	Spent non-halogenated solvents	Nitrobenzene	98-95-3		1
2	1	235	ID-RFO-003	3	TSCAB	TSCA	PCBs		1336-36-3	15	30
2	1	57	ID-RFO-004	4	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	57	ID-RFO-004	4	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	57	ID-RFO-004	4	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	57	ID-RFO-004	4	D008C	D008	Lead	Radioactive lead solids	64083-05-2	0.001	1
2	1	57	ID-RFO-004	4	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.008	1
2	1	57	ID-RFO-004	4	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	57	ID-RFO-004	4	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.003	1
2	1	57	ID-RFO-004	4	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	57	ID-RFO-004	4	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	57	ID-RFO-004	4	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	57	ID-RFO-004	4	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	57	ID-RFO-004	4	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	223	ID-RFO-005	5	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.		90	90
2	1	35	ID-RFO-007	7	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	35	ID-RFO-007	7	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	35	ID-RFO-007	7	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	35	ID-RFO-007	7	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	35	ID-RFO-007	7	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	35	ID-RFO-007	7	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	35	ID-RFO-007	7	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	35	ID-RFO-007	7	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	35	ID-RFO-007	7	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	35	ID-RFO-007	7	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.008	1
2	1	35	ID-RFO-007	7	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	35	ID-RFO-007	7	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	35	ID-RFO-007	7	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	35	ID-RFO-007	7	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	35	ID-RFO-007	7	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	35	ID-RFO-007	7	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	35	ID-RFO-007	7	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	192	ID-RFO-090	90	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	192	ID-RFO-090	90	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.02	1
2	1	192	ID-RFO-090	90	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	192	ID-RFO-090	90	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.07	1
2	1	192	ID-RFO-090	90	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	192	ID-RFO-090	90	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	192	ID-RFO-090	90	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	192	ID-RFO-090	90	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	192	ID-RFO-090	90	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	192	ID-RFO-090	90	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1
2	1	192	ID-RFO-090	90	F004B	F004	Spent non-halogenated solvents	Nitrobenzene	98-95-3		1
2	1	55	ID-RFO-112	112	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		10
2	1	55	ID-RFO-112	112	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		10
2	1	55	ID-RFO-112	112	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5	10
2	1	55	ID-RFO-112	112	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	5	10
2	1	55	ID-RFO-112	112	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	5	10
2	1	30	ID-RFO-113	113	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	30	ID-RFO-113	113	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1		1
2	1	30	ID-RFO-113	113	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3		1
2	1	30	ID-RFO-113	113	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	56	ID-RFO-114	114	D008A	D008	Lead		7439-92-1	0.5	1
2	1	56	ID-RFO-114	114	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.5	1
2	1	56	ID-RFO-114	114	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.5	1
2	1	56	ID-RFO-114	114	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.5	1
2	1	56	ID-RFO-114	114	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.5	1
2	1	56	ID-RFO-114	114	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	56	ID-RFO-114	114	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	56	ID-RFO-114	114	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1
2	1	73	ID-RFO-116	116	D008A	D008	Lead		7439-92-1	1	2
2	1	73	ID-RFO-116	116	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	1	2
2	1	73	ID-RFO-116	116	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	2
2	1	73	ID-RFO-116	116	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	1	2
2	1	73	ID-RFO-116	116	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6	1	2
2	1	73	ID-RFO-116	116	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	141	ID-RFO-117	117	D008A	D008	Lead	.	7439-92-1	10	10
2	1	141	ID-RFO-117	117	D008C	D008	Lead	Radioactive lead solids	64083-05-2	10	10
2	1	141	ID-RFO-117	117	D028A	D028	1,2-DICHLOROETHANE		107-6-2	0.1	1
2	1	141	ID-RFO-117	117	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	1	2
2	1	141	ID-RFO-117	117	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1	2
2	1	141	ID-RFO-117	117	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	1	2
2	1	141	ID-RFO-117	117	F001F	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TRICHLOROETHYLENE	79-01-6	0.1	1
2	1	141	ID-RFO-117	117	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	1	2
2	1	120	ID-RFO-118	118	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	120	ID-RFO-118	118	D008A	D008	Lead	.	7439-92-1		1
2	1	120	ID-RFO-118	118	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		1
2	1	120	ID-RFO-118	118	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	120	ID-RFO-118	118	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1
2	1	120	ID-RFO-118	118	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	102	ID-RFO-119	119	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	102	ID-RFO-119	119	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	102	ID-RFO-119	119	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	1	1
2	1	102	ID-RFO-119	119	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.1	1
2	1	102	ID-RFO-119	119	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.1	1
2	1	102	ID-RFO-119	119	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	102	ID-RFO-119	119	TSCAA	TSCA	ASBESTOS		1332-21-4	25	50
2	1	93	ID-RFO-122	122	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	1	1
2	1	93	ID-RFO-122	122	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.1	1
2	1	93	ID-RFO-122	122	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.1	1
2	1	93	ID-RFO-122	122	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	129	ID-RFO-123	123	D008C	D008	Lead	Radioactive lead solids	64083-05-2	10	10
2	1	129	ID-RFO-123	123	F001A	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,1-TRICHLOROETHANE	71-55-6	0.1	1
2	1	129	ID-RFO-123	123	F001C	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	CARBON TETRACHLORIDE	56-23-5	0.1	1
2	1	129	ID-RFO-123	123	F001F	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TRICHLOROETHYLENE	79-01-6	0.1	1
2	1	129	ID-RFO-123	123	F002F	F002	SPENT HALOGENATED SOLVENTS	METHYLENE CHLORIDE	75-9-2	0.1	1
2	1	159	ID-RFO-241	241	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	159	ID-RFO-241	241	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	159	ID-RFO-241	241	D008C	D008	Lead	Radioactive lead solids	64083-05-2	0.2	1
2	1	159	ID-RFO-241	241	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.02	1
2	1	159	ID-RFO-241	241	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	32	ID-RFO-290	290	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	32	ID-RFO-290	290	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	32	ID-RFO-290	290	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	32	ID-RFO-290	290	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.002	1
2	1	32	ID-RFO-290	290	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.002	1
2	1	32	ID-RFO-290	290	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.002	1
2	1	32	ID-RFO-290	290	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.001	1
2	1	32	ID-RFO-290	290	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	32	ID-RFO-290	290	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	32	ID-RFO-290	290	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	33	ID-RFO-292	292	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	33	ID-RFO-292	292	D006A	D006	Cadmium		7440-43-9	0.001	1
2	1	33	ID-RFO-292	292	D008A	D008	Lead		7439-92-1	0.001	1
2	1	33	ID-RFO-292	292	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.002	1
2	1	33	ID-RFO-292	292	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.002	1
2	1	33	ID-RFO-292	292	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.002	1
2	1	33	ID-RFO-292	292	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.001	1
2	1	33	ID-RFO-292	292	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	33	ID-RFO-292	292	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	33	ID-RFO-292	292	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1
2	1	171	ID-RFO-300	300	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	171	ID-RFO-300	300	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	171	ID-RFO-300	300	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	171	ID-RFO-300	300	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1
2	1	171	ID-RFO-300	300	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	171	ID-RFO-300	300	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	171	ID-RFO-300	300	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	171	ID-RFO-300	300	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1		1
2	1	171	ID-RFO-300	300	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	171	ID-RFO-300	300	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	172	ID-RFO-301	301	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	51	ID-RFO-302	302	D008C	D008	Lead	Radioactive lead solids	64083-05-2	25	40
2	1	51	ID-RFO-302	302	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	51	ID-RFO-302	302	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	51	ID-RFO-302	302	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	143	ID-RFO-320	320	D008A	D008	Lead		7439-92-1	5	10
2	1	143	ID-RFO-320	320	D008C	D008	Lead	Radioactive lead solids	64083-05-2	5	10
2	1	143	ID-RFO-320	320	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.002	1
2	1	143	ID-RFO-320	320	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.008	1
2	1	143	ID-RFO-320	320	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.001	1
2	1	143	ID-RFO-320	320	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.02	1
2	1	104	ID-RFO-328	328	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	104	ID-RFO-328	328	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.002	1
2	1	104	ID-RFO-328	328	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.001	1
2	1	104	ID-RFO-328	328	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.002	1
2	1	104	ID-RFO-328	328	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.001	1
2	1	74	ID-RFO-330	330	D008A	D008	Lead		7439-92-1		1
2	1	74	ID-RFO-330	330	D008C	D008	Lead	Radioactive lead solids	64083-05-2		1
2	1	74	ID-RFO-330	330	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	74	ID-RFO-330	330	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	74	ID-RFO-330	330	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	74	ID-RFO-330	330	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	74	ID-RFO-330	330	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	74	ID-RFO-330	330	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	74	ID-RFO-330	330	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	74	ID-RFO-330	330	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	74	ID-RFO-330	330	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4		1
2	1	74	ID-RFO-330	330	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	74	ID-RFO-330	330	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	74	ID-RFO-330	330	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	105	ID-RFO-335	335	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	105	ID-RFO-335	335	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	105	ID-RFO-335	335	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	105	ID-RFO-335	335	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	105	ID-RFO-335	335	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	105	ID-RFO-335	335	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.015	1
2	1	105	ID-RFO-335	335	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	105	ID-RFO-335	335	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.015	1
2	1	105	ID-RFO-335	335	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	105	ID-RFO-335	335	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	105	ID-RFO-335	335	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	105	ID-RFO-335	335	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	105	ID-RFO-335	335	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	105	ID-RFO-335	335	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	105	ID-RFO-335	335	TSCAA	TSCA	ASBESTOS		1332-21-4	45	60
2	1	75	ID-RFO-336	336	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	75	ID-RFO-336	336	D002F	D002	Corrosive	Corrosive characteristic wastes that are managed in CWA, CWA equivalent, or Class I SDWA system			1
2	1	75	ID-RFO-336	336	D008A	D008	Lead	.	7439-92-1		1
2	1	75	ID-RFO-336	336	D008C	D008	Lead	Radioactive lead solids	64083-05-2		1
2	1	75	ID-RFO-336	336	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	75	ID-RFO-336	336	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	75	ID-RFO-336	336	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	75	ID-RFO-336	336	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	75	ID-RFO-336	336	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	75	ID-RFO-336	336	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	75	ID-RFO-336	336	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	75	ID-RFO-336	336	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	75	ID-RFO-336	336	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	75	ID-RFO-336	336	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	76	ID-RFO-337	337	D008A	D008	Lead	.	7439-92-1		1
2	1	76	ID-RFO-337	337	D008C	D008	Lead	Radioactive lead solids	64083-05-2		1
2	1	76	ID-RFO-337	337	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	76	ID-RFO-337	337	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	76	ID-RFO-337	337	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	76	ID-RFO-337	337	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	76	ID-RFO-337	337	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	76	ID-RFO-337	337	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	76	ID-RFO-337	337	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	76	ID-RFO-337	337	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	76	ID-RFO-337	337	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	76	ID-RFO-337	337	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4		1
2	1	76	ID-RFO-337	337	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1		1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	76	ID-RFO-337	337	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	76	ID-RFO-337	337	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	76	ID-RFO-337	337	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	106	ID-RFO-338	338	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	106	ID-RFO-338	338	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	106	ID-RFO-338	338	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	106	ID-RFO-338	338	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	106	ID-RFO-338	338	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	106	ID-RFO-338	338	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.015	1
2	1	106	ID-RFO-338	338	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	106	ID-RFO-338	338	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.015	1
2	1	106	ID-RFO-338	338	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	106	ID-RFO-338	338	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	106	ID-RFO-338	338	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	106	ID-RFO-338	338	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	106	ID-RFO-338	338	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	106	ID-RFO-338	338	TSCAA	TSCA	ASBESTOS		1332-21-4	45	60
2	1	130	ID-RFO-339	339	D008C	56	Lead	Radioactive lead solids	64083-05-2	56	60
2	1	130	ID-RFO-339	339	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	130	ID-RFO-339	339	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	130	ID-RFO-339	339	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	130	ID-RFO-339	339	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	130	ID-RFO-339	339	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1
2	1	130	ID-RFO-339	339	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	130	ID-RFO-339	339	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	130	ID-RFO-339	339	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	130	ID-RFO-339	339	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	130	ID-RFO-339	339	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4		1
2	1	130	ID-RFO-339	339	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	130	ID-RFO-339	339	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	130	ID-RFO-339	339	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	107	ID-RFO-360	360	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	107	ID-RFO-360	360	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	107	ID-RFO-360	360	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.015	1
2	1	107	ID-RFO-360	360	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	107	ID-RFO-360	360	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.015	1
2	1	107	ID-RFO-360	360	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	107	ID-RFO-360	360	TSCAA	TSCA	ASBESTOS		1332-21-4	45	60
2	1	94	ID-RFO-371	371	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.1	1
2	1	94	ID-RFO-371	371	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6	0.1	1
2	1	94	ID-RFO-371	371	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	190	ID-RFO-374	374	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	190	ID-RFO-374	374	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.1	1
2	1	190	ID-RFO-374	374	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.7	1
2	1	190	ID-RFO-374	374	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	190	ID-RFO-374	374	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	190	ID-RFO-374	374	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	190	ID-RFO-374	374	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	190	ID-RFO-374	374	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	190	ID-RFO-374	374	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1
2	1	190	ID-RFO-374	374	F004B	F004	Spent non-halogenated solvents	Nitrobenzene	98-95-3		1
2	1	95	ID-RFO-375	375	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.02	1
2	1	95	ID-RFO-375	375	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	95	ID-RFO-375	375	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.07	1
2	1	95	ID-RFO-375	375	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	108	ID-RFO-376	376	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	108	ID-RFO-376	376	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	108	ID-RFO-376	376	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.02	1
2	1	108	ID-RFO-376	376	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	108	ID-RFO-376	376	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.07	1
2	1	108	ID-RFO-376	376	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	108	ID-RFO-376	376	TSCAA	TSCA	ASBESTOS		1332-21-4	5	10
2	1	217	ID-RFO-430	430	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			20
2	1	218	ID-RFO-431	431	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			20
2	1	219	ID-RFO-432	432	D008A	D008	Lead	.	7439-92-1		1
2	1	219	ID-RFO-432	432	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	219	ID-RFO-432	432	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	219	ID-RFO-432	432	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	219	ID-RFO-432	432	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	121	ID-RFO-440	440	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	121	ID-RFO-440	440	D008A	D008	Lead	.	7439-92-1		1
2	1	121	ID-RFO-440	440	D008C	D008	Lead	Radioactive lead solids	64083-05-2		1
2	1	121	ID-RFO-440	440	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	121	ID-RFO-440	440	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	121	ID-RFO-440	440	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	121	ID-RFO-440	440	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	121	ID-RFO-440	440	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	121	ID-RFO-440	440	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	121	ID-RFO-440	440	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	122	ID-RFO-441	441	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	122	ID-RFO-441	441	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	122	ID-RFO-441	441	D008A	D008	Lead	.	7439-92-1		1
2	1	122	ID-RFO-441	441	D008C	D008	Lead	Radioactive lead solids	64083-05-2		1
2	1	122	ID-RFO-441	441	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	122	ID-RFO-441	441	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	122	ID-RFO-441	441	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	123	ID-RFO-442	442	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	123	ID-RFO-442	442	D008A	D008	Lead	.	7439-92-1		1
2	1	123	ID-RFO-442	442	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	123	ID-RFO-442	442	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	123	ID-RFO-442	442	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	123	ID-RFO-442	442	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1
2	1	123	ID-RFO-442	442	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	123	ID-RFO-442	442	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	123	ID-RFO-442	442	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	123	ID-RFO-442	442	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	123	ID-RFO-442	442	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1		1
2	1	123	ID-RFO-442	442	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	123	ID-RFO-442	442	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	131	ID-RFO-463	463	D008C	D008	Lead	Radioactive lead solids	64083-05-2	56	60
2	1	131	ID-RFO-463	463	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	131	ID-RFO-463	463	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5		1
2	1	131	ID-RFO-463	463	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	131	ID-RFO-463	463	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	52	ID-RFO-464	464	D008C	D008	Lead	Radioactive lead solids	64083-05-2	25	40
2	1	52	ID-RFO-464	464	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6		1
2	1	144	ID-RFO-480	480	D008A	D008	Lead		7439-92-1	5	10
2	1	144	ID-RFO-480	480	D008C	D008	Lead	Radioactive lead solids	64083-05-2	5	10
2	1	144	ID-RFO-480	480	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	144	ID-RFO-480	480	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	144	ID-RFO-480	480	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.008	1
2	1	144	ID-RFO-480	480	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1
2	1	144	ID-RFO-480	480	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.001	1
2	1	144	ID-RFO-480	480	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	144	ID-RFO-480	480	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.02	1
2	1	144	ID-RFO-480	480	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	144	ID-RFO-480	480	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4		1
2	1	144	ID-RFO-480	480	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1		1
2	1	144	ID-RFO-480	480	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	144	ID-RFO-480	480	F005C	F005	Spent non-halogenated solvents	Benzene	71-43-2		1
2	1	144	ID-RFO-480	480	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	145	ID-RFO-481	481	D008A	D008	Lead		7439-92-1	5	10
2	1	145	ID-RFO-481	481	D008C	D008	Lead	Radioactive lead solids	64083-05-2	5	10
2	1	145	ID-RFO-481	481	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	145	ID-RFO-481	481	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.002	1
2	1	145	ID-RFO-481	481	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.008	1
2	1	145	ID-RFO-481	481	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.001	1
2	1	145	ID-RFO-481	481	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	145	ID-RFO-481	481	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.02	1
2	1	145	ID-RFO-481	481	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	109	ID-RFO-490	490	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	109	ID-RFO-490	490	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	109	ID-RFO-490	490	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.015	1
2	1	109	ID-RFO-490	490	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	109	ID-RFO-490	490	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.015	1
2	1	109	ID-RFO-490	490	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	109	ID-RFO-490	490	TSCAA	TSCA	ASBESTOS		1332-21-4	25	50

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	78	ID-RFO-900	900	D008A	D008	Lead	.	7439-92-1		1
2	1	78	ID-RFO-900	900	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	78	ID-RFO-900	900	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	78	ID-RFO-900	900	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	78	ID-RFO-900	900	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	78	ID-RFO-900	900	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	78	ID-RFO-900	900	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	161	ID-RFO-950	950	D008A	D008	Lead	.	7439-92-1	0.2	1
2	1	161	ID-RFO-950	950	D008C	D008	Lead	Radioactive lead solids	64083-05-2	0.2	1
2	1	79	ID-RFO-970	970	D008A	D008	Lead	.	7439-92-1		1
2	1	79	ID-RFO-970	970	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.2	1
2	1	79	ID-RFO-970	970	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.15	1
2	1	79	ID-RFO-970	970	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.075	1
2	1	79	ID-RFO-970	970	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	79	ID-RFO-970	970	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.1	1
2	1	79	ID-RFO-970	970	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	61	ID-RFO-976	976	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	61	ID-RFO-976	976	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	61	ID-RFO-976	976	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	61	ID-RFO-976	976	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	61	ID-RFO-976	976	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		0.03
2	1	61	ID-RFO-976	976	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	61	ID-RFO-976	976	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	61	ID-RFO-976	976	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.008	1
2	1	61	ID-RFO-976	976	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	61	ID-RFO-976	976	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.003	1
2	1	61	ID-RFO-976	976	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	61	ID-RFO-976	976	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	61	ID-RFO-976	976	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	61	ID-RFO-976	976	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	61	ID-RFO-976	976	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	61	ID-RFO-976	976	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1
2	1	62	ID-RFO-978	978	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	62	ID-RFO-978	978	D006A	D006	Cadmium	.	7440-43-9	0.001	1
2	1	62	ID-RFO-978	978	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	62	ID-RFO-978	978	D008A	D008	Lead	.	7439-92-1	0.001	1
2	1	62	ID-RFO-978	978	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6		1
2	1	62	ID-RFO-978	978	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.008	1
2	1	62	ID-RFO-978	978	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	62	ID-RFO-978	978	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.003	1
2	1	62	ID-RFO-978	978	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	62	ID-RFO-978	978	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	62	ID-RFO-978	978	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.07	1
2	1	62	ID-RFO-978	978	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.003	1
2	1	62	ID-RFO-978	978	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	62	ID-RFO-978	978	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.005	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	193	ID-RFO-990	990	D001G	D001	Ignitable	Ignitable characteristic wastes, that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	193	ID-RFO-990	990	F001A	F001	Spent halogenated solvents used in degreasing	1,1,1-Trichloroethane	71-55-6	0.02	1
2	1	193	ID-RFO-990	990	F001B	F001	Spent halogenated solvents used in degreasing	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	1
2	1	193	ID-RFO-990	990	F001C	F001	Spent halogenated solvents used in degreasing	Carbon tetrachloride	56-23-5	0.07	1
2	1	193	ID-RFO-990	990	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4		1
2	1	193	ID-RFO-990	990	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6		1
2	1	193	ID-RFO-990	990	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.005	1
2	1	193	ID-RFO-990	990	F003F	F003	Spent non-halogenated solvents	Methanol	67-56-1	0.001	1
2	1	193	ID-RFO-990	990	F003H	F003	Spent non-halogenated solvents	n-Butyl alcohol	71-36-3	0.001	1
2	1	193	ID-RFO-990	990	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7	0.001	1
2	1	193	ID-RFO-990	990	F004B	F004	Spent non-halogenated solvents	Nitrobenzene	98-95-3		1
2	1	294	ID-RFO-9999	9999	D002A	D002	CORROSIVE	ACID			1
2	1	294	ID-RFO-9999	9999	D006A	D006	CADMIUM		7440-43-9	0.001	1
2	1	294	ID-RFO-9999	9999	D008A	D008	LEAD		7439-92-1	5	10
2	1	294	ID-RFO-9999	9999	F001A	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,1-TRICHLOROETHANE	71-55-6	0.2	1
2	1	294	ID-RFO-9999	9999	F001B	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	0.5	1
2	1	294	ID-RFO-9999	9999	F001C	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	CARBON TETRACHLORIDE	56-23-5	5	10
2	1	294	ID-RFO-9999	9999	F001E	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TETRACHLOROETHYLENE	127-18-4		1
2	1	294	ID-RFO-9999	9999	F001F	F001	SPENT HALOGENATED SOLVENTS USED IN DEGREASING	TRICHLOROETHYLENE	79-01-6		1
2	1	294	ID-RFO-9999	9999	F002F	F002	SPENT HALOGENATED SOLVENTS	METHYLENE CHLORIDE	75-9-2	0.1	1
2	1	294	ID-RFO-9999	9999	F003F	F003	SPENT NON-HALOGENATED SOLVENTS	METHANOL	67-56-1	0.003	1
2	1	294	ID-RFO-9999	9999	F003H	F003	SPENT NON-HALOGENATED SOLVENTS	N-BUTYL ALCOHOL	71-36-3	0.001	1
2	1	294	ID-RFO-9999	9999	F003I	F003	SPENT NON-HALOGENATED SOLVENTS	XYLENES (TOTAL)	1330-20-7	0.005	1
2	1	294	ID-RFO-9999	9999	P015	P015	BERYLLIUM POWDER		7440-41-7	0.1	1
2	1	294	ID-RFO-9999	9999	UNKDF		Unknown, waste may contain Dxxx and Fxxx constituents				0
2	1	240	ID-TAN-162	*	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	240	ID-TAN-162	*	D004A	D004	Arsenic		7440-38-2		1
2	1	240	ID-TAN-162	*	D005A	D005	Barium		7440-39-3		1
2	1	240	ID-TAN-162	*	D006A	D006	Cadmium		7440-43-9		1
2	1	240	ID-TAN-162	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32	0.002	1
2	1	240	ID-TAN-162	*	D008A	D008	Lead		7439-92-1	0.002	1
2	1	240	ID-TAN-162	*	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6	0.002	0.03
2	1	240	ID-TAN-162	*	D010A	D010	Selenium		7782-49-2	0.002	1
2	1	240	ID-TAN-162	*	D011A	D011	Silver		7440-22-4		1
2	1	240	ID-TAN-162	*	D027A	D027	p-Dichlorobenzene (1,4-Dichlorobenzene)	p-Dichlorobenzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.			1
2	1	240	ID-TAN-162	*	D029A	D029	1,1-Dichloroethylene	1,1-Dichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	75-35-4		1
2	1	240	ID-TAN-162	*	D039A	D039	Tetrachloroethylene	Tetrachloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	127-18-4		1
2	1	240	ID-TAN-162	*	D040A	D040	Trichloroethylene	Trichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	79-01-6		1
2	1	240	ID-TAN-162	*	F001D	F001	Spent halogenated solvents used in degreasing	Methylene chloride	75-9-2	0.001	1
2	1	240	ID-TAN-162	*	F001E	F001	Spent halogenated solvents used in degreasing	Tetrachloroethylene	127-18-4	0.006	1
2	1	240	ID-TAN-162	*	F001F	F001	Spent halogenated solvents used in degreasing	Trichloroethylene	79-01-6	6.1	10
2	1	240	ID-TAN-162	*	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2	0.001	1
2	1	240	ID-TAN-162	*	F002H	F002	Spent halogenated solvents	Tetrachloroethylene	127-18-4	0.006	1
2	1	240	ID-TAN-162	*	F002I	F002	Spent halogenated solvents	Trichloroethylene	79-01-6	6.1	10
2	1	240	ID-TAN-162	*	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	240	ID-TAN-162	*	F005F	F005	Spent non-halogenated solvents	Methyl ethyl ketone	78-93-3	0.001	1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

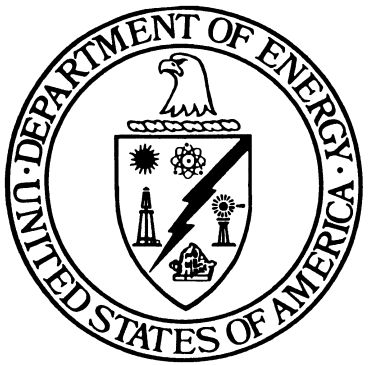
Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	241	ID-TAN-163	*	D005A	D005	Barium	.	7440-39-3	0.027	1
2	1	241	ID-TAN-163	*	D006A	D006	Cadmium	.	7440-43-9	0.008	1
2	1	241	ID-TAN-163	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32	0.086	1
2	1	241	ID-TAN-163	*	D008A	D008	Lead	.	7439-92-1	0.016	1
2	1	241	ID-TAN-163	*	D009D	D009	Mercury	Low mercury <260 mg/kg total mercury	7439-97-6	0.024	0.03
2	1	241	ID-TAN-163	*	D011A	D011	Silver	.	7440-22-4	0.007	1
2	1	779	LB-W011	*	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			1
2	1	779	LB-W011	*	D002F	D002	Corrosive	Corrosive characteristic wastes that are managed in CWA, CWA equivalent, or Class I SDWA system			1
2	1	779	LB-W011	*	D004A	D004	Arsenic	.	7440-38-2		1
2	1	779	LB-W011	*	D005A	D005	Barium	.	7440-39-3		1
2	1	779	LB-W011	*	D006A	D006	Cadmium	.	7440-43-9		1
2	1	779	LB-W011	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	779	LB-W011	*	D008A	D008	Lead	.	7439-92-1		1
2	1	779	LB-W011	*	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6		1
2	1	779	LB-W011	*	D010A	D010	Selenium	.	7782-49-2		1
2	1	779	LB-W011	*	D011A	D011	Silver	.	7440-22-4		1
2	1	779	LB-W011	*	D019A	D019	Carbon tetrachloride	Carbon Tetrachloride managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	56-23-5		1
2	1	779	LB-W011	*	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	779	LB-W011	*	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	779	LB-W011	*	D031A	D031	Heptachlor	Heptachlor managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	76-44-8		1
2	1	779	LB-W011	*	D038A	D038	Pyridine	Pyridine managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	110-86-1		1
2	1	779	LB-W011	*	D039A	D039	Tetrachloroethylene	Tetrachloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	127-18-4		1
2	1	779	LB-W011	*	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	774	LB-W012	*	D002E	D002	Corrosive	Corrosive characteristic waste that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems			1
2	1	774	LB-W012	*	D004A	D004	Arsenic	.	7440-38-2		1
2	1	774	LB-W012	*	D005A	D005	Barium	.	7440-39-3		1
2	1	774	LB-W012	*	D006A	D006	Cadmium	.	7440-43-9		1
2	1	774	LB-W012	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	774	LB-W012	*	D008A	D008	Lead	.	7439-92-1		1
2	1	774	LB-W012	*	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6		1
2	1	774	LB-W012	*	D010A	D010	Selenium	.	7782-49-2		1
2	1	774	LB-W012	*	D011A	D011	Silver	.	7440-22-4		1
2	1	774	LB-W012	*	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	774	LB-W012	*	D035A	D035	Methyl ethyl ketone	Methyle ethyl ketone managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	78-93-3		1
2	1	774	LB-W012	*	D039A	D039	Tetrachloroethylene	Tetrachloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	127-18-4		1
2	1	774	LB-W012	*	F002B	F002	Spent halogenated solvents	1,1,1-Trichloroethane	71-55-6		1
2	1	774	LB-W012	*	F002F	F002	Spent halogenated solvents	Methylene chloride	75-9-2		1
2	1	774	LB-W012	*	F003A	F003	Spent non-halogenated solvents	Acetone	67-64-1		1
2	1	774	LB-W012	*	F003D	F003	Spent non-halogenated solvents	Ethyl benzene	100-41-4		1
2	1	774	LB-W012	*	F003I	F003	Spent non-halogenated solvents	Xylenes - mixed isomers	1330-20-7		1
2	1	774	LB-W012	*	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	780	LB-W014	*	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			1
2	1	780	LB-W014	*	D004A	D004	Arsenic	.	7440-38-2		1
2	1	780	LB-W014	*	D005A	D005	Barium	.	7440-39-3		1
2	1	780	LB-W014	*	D006A	D006	Cadmium	.	7440-43-9		1
2	1	780	LB-W014	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1

Table 5. INEL alpha low level mixed waste hazardous contaminant information.

9/15/95

Waste Category 2=ALLW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	INEL Ucode	EPA Code	RCRA Category	Subcategory	CAS #	Estimated concentration (wt%)	Estimated max concentration (wt%)
2	1	780	LB-W014	*	D008A	D008	Lead	.	7439-92-1		1
2	1	780	LB-W014	*	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6		1
2	1	780	LB-W014	*	D010A	D010	Selenium	.	7782-49-2		1
2	1	780	LB-W014	*	D011A	D011	Silver	.	7440-22-4		1
2	1	780	LB-W014	*	D018A	D018	Benzene	Benzene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	71-43-2		1
2	1	780	LB-W014	*	D019A	D019	Carbon tetrachloride	Carbon Tetrachloride managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	56-23-5		1
2	1	780	LB-W014	*	D022A	D022	Chloroform	Chloroform managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	67-66-3		1
2	1	780	LB-W014	*	D028A	D028	1,2-Dichloroethane	1,2-Dichloroethane managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	107-06-2		1
2	1	780	LB-W014	*	D035A	D035	Methyl ethyl ketone	Methyle ethyl ketone managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	78-93-3		1
2	1	780	LB-W014	*	D038A	D038	Pyridine	Pyridine managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	110-86-1		1
2	1	780	LB-W014	*	D040A	D040	Trichloroethylene	Trichloroethylene managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems.	79-01-6		1
2	1	780	LB-W014	*	F005H	F005	Spent non-halogenated solvents	Toluene	108-88-3		1
2	1	781	LB-W017	*	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			1
2	1	782	LB-W018	*	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			1
2	1	783	LB-W019	*	D001B	D001	Ignitable	High-TOC ignitable characteristic liquids subcategory based on 261.21(a)(1)-greater than or equal to 10% TOC)			1
2	1	783	LB-W019	*	D004A	D004	Arsenic	.	7440-38-2		1
2	1	783	LB-W019	*	D005A	D005	Barium	.	7440-39-3		1
2	1	783	LB-W019	*	D006A	D006	Cadmium	.	7440-43-9		1
2	1	783	LB-W019	*	D007A	D007	Chromium	Chromium (Total)	7440-47-32		1
2	1	783	LB-W019	*	D008A	D008	Lead	.	7439-92-1		1
2	1	783	LB-W019	*	D009A	D009	Mercury	Elemental mercury contaminated with radioactive materials	7439-97-6		1
2	1	783	LB-W019	*	D010A	D010	Selenium	.	7782-49-2		1
2	1	783	LB-W019	*	D011A	D011	Silver	.	7440-22-4		1

End of category 2 mixed waste 1



Waste Description Information for Transuranic-Contaminated Wastes Stored at the Idaho National Engineering Laboratory

Appendix B - Detailed Information for Mixed and Non-Mixed Transuranic Waste

September 1995

Idaho National Engineering Laboratory

Appendix Summary

This appendix presents detailed information on the mixed and non-mixed transuranic contaminated transuranic wastes at the Idaho National Engineering Laboratory. The information is provided in a series of tables. Table 1 provides waste identification and description information. Table 2 provides waste storage information. Table 3 provides waste matrix information. Table 4 provides radionuclide contaminant information and Table 5 provides hazardous contaminant information. Additional information on the table format and field descriptions is provided in section 6 of the summary document.

This appendix also includes alpha activity concentration information and radionuclide isotopic composition information for the greater than 100 nCi/g category (transuranic) for the following waste streams presently classified as alpha low level: ID-RFO-290, content code 290; ID-ANL-161, content code 161; and ID-CPP-156, content code 156.

The waste stream identifier codes previously used have recently been updated. Pages iii through v provide a listing of waste stream codes included in this appendix as well as a cross reference to the previous waste stream codes.

Listing of waste streams included in Appendix B

INEL key code	Waste stream code	Content code	Previous waste stream code
Mixed Waste			
391	CH-ANL-142T	*	
9	CH-ANL-180T	*	
11	CH-ANL-182T	*	
15	CH-ANL-218T	*	
17	CH-ANL-241T	*	
19	CH-ANL-243T	*	
21	CH-ANL-245T	*	
22	CH-ANL-246T	*	
392	CH-ANL-503T	*	CH-ANL-503
390	CH-ANL-505T	*	CH-ANL-242T
163	ID-AEO-100T	100	ID-EGG-134T
164	ID-AEO-101T	101	ID-EGG-134T
307	ID-AEO-102T	102	ID-EGG-288T
209	ID-AEO-104T	104	ID-EGG-144T
308	ID-AEO-105T	105	ID-EGG-288T
309	ID-AEO-106T	106	ID-EGG-288T
310	ID-AEO-107T	107	ID-EGG-288T
81	ID-AEO-110T	110	ID-EGG-114T
83	ID-AEO-120T	120	ID-EGG-114T
313	ID-ANL-160T	160	ID-EGG-288T
300	ID-ANL-161	161	ID-EGG-288
314	ID-ANL-162T	162	ID-EGG-288T
315	ID-ANL-163T	163	ID-EGG-288T
166	ID-BCO-201T	201	ID-EGG-134T
317	ID-BCO-202T	202	ID-EGG-288T
318	ID-BCO-203T	203	ID-EGG-288T
319	ID-BCO-204T	204	ID-EGG-288T
80	ID-BTO-010T	10	ID-EGG-114T
148	ID-BTO-020T	20	ID-EGG-132T
43	ID-BTO-030T	30	ID-EGG-102T
213	ID-BTO-040T	40	ID-EGG-144T
210	ID-CPP-151T	151	ID-EGG-144T
299	ID-CPP-156	156	ID-EGG-288
347	ID-CPP-172	*	ID-WIN-172
204	ID-INL-142T	*	ID-EGG-142T
195	ID-INL-150T	150	ID-EGG-141T
311	ID-INL-155T	155	ID-EGG-288T
312	ID-INL-157T	157	ID-EGG-288T
320	ID-MDO-801T	801	ID-EGG-288T
135	ID-MDO-802T	802	ID-EGG-120T
152	ID-MDO-803T	803	ID-EGG-132T
117	ID-MDO-805T	805	ID-EGG-118T
128	ID-MDO-810T	810	ID-EGG-119T
45	ID-MDO-811T	811	ID-EGG-102T
118	ID-MDO-813T	813	ID-EGG-118T
179	ID-MDO-814T	814	ID-EGG-137T
321	ID-MDO-815T	815	ID-EGG-288T
168	ID-MDO-824T	824	ID-EGG-134T
88	ID-MDO-826T	826	ID-EGG-114T
89	ID-MDO-827T	827	ID-EGG-114T
67	ID-MDO-834T	834	ID-EGG-112T
68	ID-MDO-835T	835	ID-EGG-112T
69	ID-MDO-836T	836	ID-EGG-112T
198	ID-MDO-842T	842	ID-EGG-141T
322	ID-MDO-847T	847	ID-EGG-288T
323	ID-MDO-848T	848	ID-EGG-288T
39	ID-OFS-111T	111	ID-EGG-102T
165	ID-OFS-121T	121	ID-EGG-134T
295	ID-RFO-000T	0	ID-EGG-287T
38	ID-RFO-001T	1	ID-EGG-102T
41	ID-RFO-002T	2	ID-EGG-102T
236	ID-RFO-003T	3	ID-EGG-158T
65	ID-RFO-004T	4	ID-EGG-112T
227	ID-RFO-005T	5	ID-EGG-146T
44	ID-RFO-007T	7	ID-EGG-102T
63	ID-RFO-112T	112	ID-EGG-112T
40	ID-RFO-113T	113	ID-EGG-102T
64	ID-RFO-114T	114	ID-EGG-112T

INEL key code	Waste stream code	Content code	Previous waste stream code
82	ID-RFO-116T	116	ID-EGG-114T
147	ID-RFO-117T	117	ID-EGG-132T
124	ID-RFO-118T	118	ID-EGG-119T
110	ID-RFO-119T	119	ID-EGG-118T
97	ID-RFO-122T	122	ID-EGG-115T
132	ID-RFO-123T	123	ID-EGG-120T
167	ID-RFO-241T	241	ID-EGG-134T
32	ID-RFO-290	290	ID-EGG-102
42	ID-RFO-292T	292	ID-EGG-102T
176	ID-RFO-300T	300	ID-EGG-137T
177	ID-RFO-301T	301	ID-EGG-137T
53	ID-RFO-302T	302	ID-EGG-109T
178	ID-RFO-312T	312	ID-EGG-137T
149	ID-RFO-320T	320	ID-EGG-132T
111	ID-RFO-328T	328	ID-EGG-118T
84	ID-RFO-330T	330	ID-EGG-114T
112	ID-RFO-335T	335	ID-EGG-118T
85	ID-RFO-336T	336	ID-EGG-114T
86	ID-RFO-337T	337	ID-EGG-114T
113	ID-RFO-338T	338	ID-EGG-118T
133	ID-RFO-339T	339	ID-EGG-120T
114	ID-RFO-360T	360	ID-EGG-118T
98	ID-RFO-371T	371	ID-EGG-115T
197	ID-RFO-374T	374	ID-EGG-141T
99	ID-RFO-375T	375	ID-EGG-115T
115	ID-RFO-376T	376	ID-EGG-118T
225	ID-RFO-409T	409	ID-EGG-146T
226	ID-RFO-414T	414	ID-EGG-146T
220	ID-RFO-430T	430	ID-EGG-145T
221	ID-RFO-431T	431	ID-EGG-145T
222	ID-RFO-432T	432	ID-EGG-145T
125	ID-RFO-440T	440	ID-EGG-119T
126	ID-RFO-441T	441	ID-EGG-119T
127	ID-RFO-442T	442	ID-EGG-119T
87	ID-RFO-460T	460	ID-EGG-114T
134	ID-RFO-463T	463	ID-EGG-120T
54	ID-RFO-464T	464	ID-EGG-109T
150	ID-RFO-480T	480	ID-EGG-132T
151	ID-RFO-481T	481	ID-EGG-132T
116	ID-RFO-490T	490	ID-EGG-118T
66	ID-RFO-700T	700	ID-EGG-112T
90	ID-RFO-900T	900	ID-EGG-114T
169	ID-RFO-950T	950	ID-EGG-134T
91	ID-RFO-970T	970	ID-EGG-114T
70	ID-RFO-976T	976	ID-EGG-112T
71	ID-RFO-978T	978	ID-EGG-112T
46	ID-RFO-980T	980	ID-EGG-102T
296	ID-RFO-9999T	9999	ID-EGG-287T
316	ID-TAN-200T	200	ID-EGG-288T
327	ID-TRA-291T	*	ID-EGG-291T
Non-mixed waste			
763	CH-ANL-538	*	CH-ANL-RDT
786	CH-ANL-539	*	
787	CH-ANL-540	*	
788	CH-ANL-541	*	AW-T001
789	CH-ANL-542	*	
790	CH-ANL-543	*	AW-T001
791	CH-ANL-544	*	AW-T002
766	CH-ANL-HST	*	
759	CH-ANL-SCT	*	
214	ID-BTO-012TN	12	ID-EGG-144TN
215	ID-BTO-015TN	15	ID-EGG-144TN
237	ID-BTO-050TN	50	ID-EGG-158TN
154	ID-BTO-081TN	81	ID-EGG-132TN
216	ID-INL-152TN	152	ID-EGG-144TN
211	ID-INL-153TN	153	ID-EGG-144T
92	ID-MDO-804TN	804	ID-EGG-114TN
170	ID-MDO-825TN	825	ID-EGG-134TN
180	ID-RFO-115TN	115	ID-EGG-137TN
224	ID-RFO-124TN	124	ID-EGG-146T
181	ID-RFO-303TN	303	ID-EGG-137TN

INEL key code	Waste stream code	Content code	Previous waste stream code
182	ID-RFO-310TN	310	ID-EGG-137TN
183	ID-RFO-311TN	311	ID-EGG-137TN
119	ID-RFO-361TN	361	ID-EGG-118TN
184	ID-RFO-370TN	370	ID-EGG-137TN
196	ID-RFO-372TN	372	ID-EGG-141T
185	ID-RFO-391TN	391	ID-EGG-137TN
186	ID-RFO-392TN	392	ID-EGG-137TN
187	ID-RFO-393TN	393	ID-EGG-137TN
228	ID-RFO-410TN	410	ID-EGG-146TN
229	ID-RFO-411TN	411	ID-EGG-146TN
230	ID-RFO-412TN	412	ID-EGG-146TN
153	ID-RFO-416TN	416	ID-EGG-132TN
199	ID-RFO-420TN	420	ID-EGG-141TN
200	ID-RFO-421TN	421	ID-EGG-141TN
201	ID-RFO-422TN	422	ID-EGG-141TN
202	ID-RFO-425TN	425	ID-EGG-141TN
100	ID-RFO-960TN	960	ID-EGG-115TN
47	ID-RFO-995TN	995	ID-EGG-102TN
212	ID-TRA-154TN	154	ID-EGG-144T

a. Radiological information for activity greater than 100 nCi/g is included for some alpha low level labeled waste streams in Table 4.

Table 1. INEL transuranic mixed and non-mixed waste identification and description information. 9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
Mixed Waste = 1											
3	1	391	CH-ANL-142T	*	LEAD CONTAMINATED WASTE	This waste stream is typically lead lined gloves replaced at the Experimental Fuel Laboratory Glove Box.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	1	2	2
3	1	9	CH-ANL-180T	*	SODIUM - TRU	Sodium is used as a primary and was used as a secondary coolant for the EBR-II reactor. Waste sodium metal is a hazardous constituent of some of the TRU waste stored at the ANL-W Radioactive Scrap and Waste Facility (RSWF). The waste is generated during maintenance and operational activities. The sodium typically coats waste metal equipment, experiments, and components removed during reactor operations and maintenance activities.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	2	2	2	2
3	1	11	CH-ANL-182T	*	SODIUM POTASSIUM -NaK- TRU	Sodium potassium alloy (NaK) is used as a coolant for some components of the EBR-II Reactor. Waste NaK metal is a hazardous constituent of some transuranic wastes stored at the ANL-W Radioactive Scrap and Waste Facility (RSWF). The remote-handled NaK waste at RSWF is contained in stainless steel capsules or tubing and placed inside carbon steel waste cans which then are placed in stainless steel outer cans. The entire package is then stored in RSWF storage liners (carbon steel soil storage vaults). The NaK is generated during maintenance and operational activities. NaK waste is in canisters with TRU waste metal pieces and rods from reactor experiments.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	2	2	2	2
3	1	15	CH-ANL-218T	*	ELECTROREFINER STRIPPED SALT - Ba AND Cd	This waste stream consists of chloride salts containing residual amounts of cadmium and barium. This waste stream will be generated from the Fuel Cycle Facility operations.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	2	2	2
3	1	17	CH-ANL-241T	*	TRU-CD-HOT CELL WASTE	This waste stream consisted of metallic cadmium, salts, and associated cleanup materials (paper towels and cloth rags). The waste is contaminated with activation and fission products as well as with plutonium. This waste stream is generated for Fuel Cycle Facility Demonstration support experiments; the analysis of fuels in the hot cells. Previous waste is stored in the Radioactive Scrap and Waste Facility in two liners. Future waste generation will be small because evaporation as part of the process will be done in the hot cell to minimize the volume.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	2	2	2
3	1	19	CH-ANL-243T	*	ELEMENT HARDWARE FCF WASTE	This waste stream will consist of small pieces of stainless steel from nuclear fuel. This waste stream will be generated from the "Element Chopper" station at the ANL-W Fuel Cycled Facility. The plan for this waste stream (which has not been generated) is to either immobilize or recover the cadmium as a part of the waste processing phase of the project. This will meet the EPA disposal criteria for cadmium waste streams (FCF FSAR).	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	2	2	2
3	1	21	CH-ANL-245T	*	ELECTROREFINER STRIPPED CADMIUM	This waste stream consists of encapsulated waste cadmuim metal. This waste stream will be generated from the Electrorefiner station in the ANL-W Fuel Cycle Facility.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	2	2	2
3	1	22	CH-ANL-246T	*	ELECTROREFINER INSOLUBLES W/ CADMIUM	This waste stream consists of cadmium metal with other heavy metals & "noble" metals (they are not reactive in the FCF electrorefining process). This waste stream will be generated from the Electrorefiner station in the ANL-W Fuel Cycle Facility processes. This waste stream includes inorganic sludges/particulates. The plan for this waste stream (which has not been generated) is to either immobilize or recover the cadmium as a part of the waste processing phase of the project. This will meet the EPA disposal criteria for cadmium waste streams (FCF FSAR).	Idaho National Engineering Laboratory - Argonne National Laboratory - West	3	2	2	2
3	1	392	CH-ANL-503T	*	TRU WASTE USED PRE-FILTERS	This waste stream consists of metal or wood framed pre-filters. Pre filters are 2' X 2' X 0.5'. The filters have screen mesh covering high efficiency filtering media. The concentration of radioisotopes and RCRA metals varies in each filter. These filters were generated from the deontamination of the analytical hot cells in 1993 and 1994.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	1	2	2	2

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	390	CH-ANL-505T	*	ALHC UPGRADE DECON DEBRIS	Waste packaged for WIPP containing: Radioactive cadmium debris from CH-ANL-242T, solidified to meet WIPP-WAC requirement for particulate immobilization, and bags of lead-lined gloves were placed in the solidified CO2 drums to fill the void spaces. The leftover gloves were placed in a separate 30-gallon drum. 1710 pounds of waste are in two TRU-Pac containers: MW-S-94-02 and MW-S-94-03.	Idaho National Engineering Laboratory - Argonne National Laboratory - West	2	1	2	2
3	1	163	ID-AEO-100T	100	GENERAL PLANT WASTE	This waste steam, generated at Argonne National Laboratory-East, contains combustible and noncombustible items such as paper, rags, rubber gloves, plastic bottles, glassware, small tools, balances, and empty metal cans. The waste is usually separated into combustible and noncombustible streams. Prior to 1981, small amounts of absorbed organic wastes are included. Since the waste is packaged in bins, all of the bins may require opening and handling to meet TRAMPAC limits, such as vented container requirements. The organic content will exceed 6 lb/ft3 for combustible-containing bins. The levels of dispersible fines should be within WIPP-WAC limits. No free liquids should be present. There may be small amounts of sludges. The waste contains contaminated gas cylinders which are empty and have open valves. Aerosol cans may also be included. Prior to 1981, potentially unstable material such as nitrated organic resins, and ether-based scintillation fluids were also included. Wastes are packaged in 3- and 5-gallon cans and the 55-gallon drums are segregated into combustible and noncombustible streams and placed in M-III bins.	Argonne National Laboratory-East	2	1	2	3
3	1	164	ID-AEO-101T	101	CUT UP GLOVEBOXES	This waste stream, generated at Argonne National Laboratory-East, contains glovebox sections and associated equipment from decontamination and decommissioning operations. The waste is predominantly noncombustible. The organic content is around 3 lb/ft3. The levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. This waste is contained in M-III bins with half or full-sized plywood box liners. Miscellaneous items such as machines, tools, glassware, piping, filters, and cinderblock are contained in 20-mil PVC bags, heat sealed, and placed in the plywood liners. Gloveboxes are dismantled, wrapped in one or more layers of PE, and placed in the liners.	Argonne National Laboratory-East	2	1	2	3
3	1	307	ID-AEO-102T	102	ABSORBED LIQUIDS	This waste comes from Argonne National Laboratory-East. It consists of liquids adjusted to pH 10 using NaOH which are then absorbed in vermiculite. No hazardous constituents have been identified in the waste.	Argonne National Laboratory-East	3	1	2	3
3	1	209	ID-AEO-104T	104	ALPHA HOT CELL WASTE	This waste stream, generated at Argonne National Laboratory-East, contains alpha hot cell waste. Noncombustible and combustible waste are segregated. Combustible wastes include paper, plastic and PVC containers, rubber O-rings and gloves, rags, and Q-tips. Noncombustible wastes include lab equipment, tools, fixtures, glassware, pipe, tubing, fitting, fasteners, firebrick, ferrous and nonferrous metal scraps and parts, and small electric motors. Sodium in the waste is reacted with ethyl alcohol, mixed with pelletized clay, and dried. Nitrates and oxidizing agents are neutralized or reduced, mixed with peletized clay, and dried to ferrous or ferric salts. The average organic content is 5 lb/ft3. The combustible content of some containers exceeds 25 volume percent, including packaging. Fines are within WIPP-WAC limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Surface contamination and nuclear criticality meet WIPP-WAC limits. Thermal power does not exceed 10 watts per package. Surface dose rates average 5.3 R/hr and are limited to 30 R/hr. The waste is packaged in 17C 30-gallon drums. Individual waste items may be loose, contained in 4-inch diameter by 10-inch high portal cans, or contained in 1-gallon paint cans. Some metal or glass wastes are compacted. Some items may be contained in 7.5-gallon steel buckets and then packged, two buckets per package, in heat-sealed PVC bags. Since 1983, the heat-sealed bags are lined with kraft paper. These buckets of PVC-bagged waste are contained in a 30-gallon drum liner and sealed inside another 20-mil PVC bag in a 30-gallon steel drum. The maximum weight for each drum is 200 lbs, and the maximum dose rate is 30 R/hr.	Argonne National Laboratory-East	2	2	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	308	ID-AEO-105T	105	EMPTY BOTTLES	This waste stream, generated at Argonne National Laboratory-East, consists of PE and glass bottles used to transport liquid wastes. The organic content is around 5 lb/ft3. The levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present, except for small quantities of wet vermiculite. No explosive or pyrophoric materials should be in the waste. The bottles have the tops removed and are filled with vermiculite. The bottles are placed with more vermiculite in 55-gallon drums fitted with 90-mil liners. The drums are shipped in M-III bins. After receipt of the bins at INEL-RWMC, the drums are removed from the bins for storage. The bins may be reused. ID-AEO-105T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix	Argonne National Laboratory-East	2	1	2	3
3	1	309	ID-AEO-106T	106	SPECIAL SOURCE MATERIAL	There is no descriptive or constituent information available for this waste, which was generated at ANL-E.	Argonne National Laboratory-East	3	1	2	3
3	1	310	ID-AEO-107T	107	REMOTE-HANDLED WASTE	There is no descriptive or constituent information available for this waste, which was generated at ANL-E. ID-AEO-107T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix	Argonne National Laboratory-East	3	2	2	3
3	1	81	ID-AEO-110T	110	RESEARCH GENERATED WASTE COMPACTIBLE & C	This waste is generated at Argonne National Laboratory - East. The waste is derived from research activities performed in a laboratory environment. The waste includes soft plastics, cardboard, rags, paper, and cloth from various processes. The waste is packaged in 55-gallon drums or in SWBs.	Argonne National Laboratory-East	1	1	2	3
3	1	83	ID-AEO-120T	120	DECONTAMINATION AND DECOMMISIONING WASTE	This waste is generated at Argonne National Laboratory-East. The waste is derived from decontamination and disposal of facilities and ancillary systems (e.g., gloveboxes). The composition of the waste is unknown. ANL-E IDC 101 is used as an analog for waste matrix composition.	Argonne National Laboratory-East	1	1	2	3
3	1	313	ID-ANL-160T	160	ANL-W HFEF ANALYTICAL CHEMISTRY AND META	This wastestream, which was generated at ANL-W was generated during analytical chemistry and metallography operations. Item Description Code (IDC) 153 was replaced by IDC 160, ANL-W HFEF Analytical Chemistry and Metallographic Combsutibles. The waste package contains lead as shielding.	Idaho National Engineering Laboratory	1	2	2	3
3	1	314	ID-ANL-162T	162	ANL-W FMF EFL Zr-U FUEL CASTING ALLOYS R	This waste stream was generated at ANL-W. It consists of solid zirconium, uranium, and plutonium fuel casting metal alloy wastes. The waste is a solid with small amounts of glass powder from broken glass molds.The waste is created when the metal is heated in a crucible and then pressurized into the glass molds. The glass molds are broken to remove the fuel pins, and the remaining molds, crucibles, and residues constitute the waste. ID-ANL-162T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix	Idaho National Engineering Laboratory	3	1	2	3
3	1	315	ID-ANL-163T	163	ANL-W ACL COLD-LINE ABSORBED LIQUID, MIS	This waste stream was generated at ANL-W. Analytical chemistry laboratory cold-line sample analysis absorbed liquid wastes includes absorbed liquids, miscellaneous hardware and polyethylene. It is a solidified liquid.	Idaho National Engineering Laboratory - Argonne National Laboratory-West	3	1	2	3
3	1	166	ID-BCO-201T	201	NONCOMBUSTIBLE SOLIDS	This waste stream, generated at Battelle Columbus Laboratories, contains noncombustible items such as tools, crucibles, piping, valves, pieces of equipment, lead bricks, plexiglass, and filters. Organic content is minimal. The levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Prior to packaging, each waste item is given a smear test and then triple contained in either nylon reinforced plastic sheeting or PE bags. The waste is placed in 55-gallon drums fitted with 90-mil liners, or else placed in M-III bins. Some drums which do not meet INEL packaging criteria are also overpacked in bins.	Battelle Columbus Laboratories	2	1	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
3	1	317	ID-BCO-202T	202	COMBUSTIBLE SOLIDS	This waste stream, generated at Battelle Columbus Laboratories, contains such combustible items as wood, plastic suits, nylon reinforced plastic tent structures, shoe covers, rubber golves, and air hose. The waste is from decontamination and deactivation of the plutonium laboratory. The average wastes organic material content may range from 6 lb/ft3 (including the plywood liner) for bins to 8 lb/ft3 (excluding the 90-mil liner) for drums. No significant levels of fines should be present. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Each waste item is given a smear test and then triple-wrapped in nylon reinforced plastic or triple-bagged in PE bags. The items are then placed inside 55-gallon drums with 90-mil liners, or in type M-III bins with non-removable plywood liners. Type M-III bins have also been used to overpack 17H drums that do not meet INEL packaging criteria.	Battelle Columbus Laboratories	1	1	2	3
3	1	318	ID-BCO-203T	203	PAPER, METALS, GLASS	This waste stream, generated at Battelle Columbus Laboratories, contains a mixture of combustible and noncombustible items in roughly equal proportions. Combustible items include paper and paper products. Noncombustibles are primarily metal and some glass. The organic content is about 9 lb/ft3 in drums and about 5 lb/ft3 in bins. Combustibles, including packaging, may exceed 25 volume percent. The levels of dispersible fines should be within WIPP-WAC limts. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Prior to packaging, each waste item is given a smear test and then triple contained in either nylon reinforced plastic sheeting or PE bags. The waste is placed in 55-gallon drums fitted with 90-mil liners, or else placed in M-III bins. Some drums which do not meet INEL packaging criteria are also overpacked in bins.	Battelle Columbus Laboratories	2	1	2	3
3	1	319	ID-BCO-204T	204	SOLIDIFIED SOLUTIONS	This waste comes from Battelle Columbus Labs. It is a turco soap decontamination solution (used to decontaminate glove boxes from a Pu lab) which is solidified in plaster-of-paris.	Battelle Columbus Labs	3	1	2	3
3	1	80	ID-BTO-010T	10	COMBUSTIBLES	This waste stream, generated at Bettis Atomic Power Laboratory, consists primarily of rags, gloves, plastic, paper, carbo-wax, filters, oil-contaiminated "absorbal" (diatomaceous earth), and rubber. The waste stream may also contain noncombustible items. Levels of hazardous materials are unknwon. The waste organic material may exceed 14 lb/ft3 for drums. Although limited fines are expected from floor sweepings, powder, etc., levels of fines should be within WIPP-WAC limits. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric, or corrosive materials. Small waste items are wrapped in plastic and placed inside 3.25-inch diameter by 7-inch high tin-plated steel cans with screw-on lids. The can is placed inside a steel "juice can" with roll-seam sealed lids. Larger items are wrapped in plastic and placed inside 4.375-inch diameter by 20 or 24-inch high tin-plated steel cans. The sealed can was wrapped in plastic and placed inside 55-gallon waste drums lined with 90-mil drum liners. Between 15-80 cans fit in a drum. Prior to 1974, each drum was assayed by calculating weight differences to determine fissile content. After 1974, a U-232 assay gauge was used.	Bettis Atomic Power Laboratory	1	1	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	148	ID-BTO-020T	20	NONCOMPRESSIBLE, NONCOMBUSTIBLE	This waste stream, generated at Bettis Atomic Power Laboratory, contains noncompressible and noncombustible items such as absolute filters, solidified chemical waste, contaminated metal equipment, furnace brick, and highly contaminated glovebox equipment. Metal scrap could include bars, sheet, fixtures, small equipment tools, etc. made of carbon steel, stainless steel, inconnel, aluminum, copper, brass, and zirconium. Chemical wastes include spent chemical solutions and associated solids from the isotope and isotopic dilution analysis of nuclear fuel specimens. The residues were neutralized before being either mixed with absorbent material or solidified. The organic content is less than 14 lb/ft3. Although there may be some particulate material in the waste from absolute filters, the levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in the waste. Trace amounts of nitric acid or organic contaminants may be present. Individual waste items are separately packaged in plastic wrapping. Depending on size, some wrapped items are placed in (a) 3-1/4-inch diameter by 7-inches high screw-top, tin-plated steel cans, placed inside roll-seamed juice cans, or (b) larger 4-3/8-inch diameter by 20 to 24-inch high tin-plated steel cans. Chemical solutions are neutralized to a pH between 6-8 and mixed with "absorbal" in PE bottles or solidified in metal cans (which are wrapped in plastic). These items are then placed inside prepared 55-gallon drums lined with 90-mil liners. Each drum was assayed by calculated weight differences, chemical analysis, or using an assay gauge.	Bettis Atomic Power Laboratory	3	1	2	3
3	1	43	ID-BTO-030T	30	SOLIDIFIED GRINDING SLUDGE, ETC.	This waste steam, generated at Bettis Atomic Power Laboratory, consists of solidified grinding sludge and associated filters, rags, etc. The sludge can contain abraded grinding wheel material, which includes diamond dust, aluminum oxide, carborundum, and rubber. The waste is in either powder or cakes and contains not more than 10% of other waste items. The drums may contain free liquids. The estimated organic content is less than 1 lb/ft3. No particle size data are provided, but it is assumed that WIPP-WAC limits for fines would be exceeded. No free liquids should be present. No explosive, pyrophoric, or corrosive material shcuid be in the waste. Both 17c and 6m 55-gallon drums were used for packaging the waste. Fissile content was determined by calculating the weight difference by chemical analysis or by an assay gauge.	Bettis Atomic Power Laboratory	3	2	2	2
3	1	213	ID-BTO-040T	40	SOLID BINARY SCRAP POWDER, ETC.	This waste stream, generated at Bettis Atomic Power Laboratory, contains solid binary scrap as powder, pellets, or rods. The material is made of ceramic based UO2 and ThO2. Some "kilorods" or fuel rods constructed of fuel pellets within hollow zirconium tubes are also included. The organic content (excluding plywood spacers) is probably less than 1 lb/ft3. Combustibles, including packaging, may exceed 25 volume percent. No sludges or free liquids should be present. No explosive or pyrophoric material should be in this waste. Trace amounts of nitric acid contamination may be present. Binary scrap powder and pellets are packaged in tin plated steel cans. The sizes of these cans are 3-1/4 inch in diameter and 7 inches high or 4-3/8 inches in diameter and 24 inches high. Each can is wrapped in plastic. Three cans are placed in each drum. Kilorods are placed in plastic lined 5-inch diameter pipes placed in either 55- or 100-gallon drums. Between 18-20 rods are placed in each 100-gallon drum and 10-11 rods are placed in each 55-gallon drum. The drums which contain kilorods have 3/4- to 1-inch thick lead shielding. Fissile content for the drums was determined by weight difference calculations, chemical analysis, assay gauge, or by individual fuel rod values. ID-BTO-040T is currently classified as TRUMW. The only radionuclide reported in TWDB for this wastestream is Th-232 and U-233. Since thorium and uranium have atomic numbers of 90 and 92 respectively, they are not usually considered to be transuranium radionuclides, as defined in DOE Order 5820.2A. Since the TRU alpha activity concentration is less than 100 nCi/g. this wastestream may be mixed ALLW.	Bettis Atomic Power Laboratory	2	2	2	3
3	1	210	ID-CPP-151T	151	SOLIDIFIED FUEL SLUDGE	This waste stream was generated at the Idaho Chemical Processing Plant at the INEL, and may include both combustibles and noncombustibles. The waste includes a solidified sludge of acid-dissolved fuel, absorbed into diatomaceous earth. Other materials in the wastes include glass containers, plastics, metal scraps, lead shielding, and lab equipment. The waste is contained in two 30-gallon drums. At least one of the drums may be lead-lined. The sludge is contained glass bottles and sealed inside metal cans. Other materials may include glass containers, plastics, metal, scraps, lead shielding, and miscellaneous laboratory equipment. The surface dose rate is limited to 30 R/hr. The average nuclide content is around 3 grams per package (about 200,000 nCi/g).	Idaho National engineering Laboratory-Idaho Chemical Processing Plant	2	2	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	347	ID-CPP-172	*	HEPA FILTERS	HEPA filters for off-gas cleaning of ventillation. The filters are considered MTRU waste because they are derived from treatment of HLW and spent fuel processing that contain TRU constituents. HEPA filters from CPP-633 and 659 may contain F, P, and U listed waste codes resulting from laboratory quantities of waste dumped to the ICPP waste systems filtered by these HEPA filters. This waste stream contains nine NWCF (New Waste Calcining Facility) off-gas filters previously reported as part of ID-EGG-118-158, NWCF Filters. These waste streams have been combined and ID-EGG-118-158 has been made inactive.	Idaho National Engineering Laboratory	2	2	2	2
3	1	204	ID-INL-142T	*	TRANSURANIC CONTAMINATED LEAD DEBRIS	In 1983, EAD Metallurgical, Inc. of New York state, a NRC licensee, sold to a company in Mexico the workings of a smoke detector factory. Included in the contract was an agreement that the seller would assemble the plant in Mexico and train the owner/operator. After the materials were received in Mexico, the original owner refused to fulfill contractual obligations, which originated legal proceedings that eventually failed. Escalation of the problem through normal channels finally involved the governments of the two nations which concluded in the DOE assuming ownership of the material in 1986. After government negotiations, DOE-ID was instructed by DOE-HQ to retrieve the material. The material, declared as defense waste, is now stored at the INEL. The waste is TRU waste from the workings of a smoke detector factory and includes clothing, metals, and contaminated process equipment. The waste is a mixed waste that contains miscellaneous lead shielding, lead pigs, and lead sheeting throughout the waste.	Idaho National Engineering Laboratory	2	2	2	3
3	1	195	ID-INL-150T	150	LABORATORY WASTE	This waste stream, generated at Idaho National Engineering Laboratory, contains laboratory waste form ANL-W including fluxwire, fission counters, HEDL samples, analytical samples dissolved and absorbed on Oil-Dri, glassware, vials, miscellaneous waste from gloveboxes, dissolved pellets absorbed on Oil-Dri, enriched and normal U3O8 pellets, aluminum foil and capsules, TREAT waste capsules, chlorinated ion exchange resins, Pu sources, and irradiated Ge caps. Lab waste from ICPP includes kimwipes, trash, glassware, dissolved samples absorbed in Oil-Dri, analytical samples, gloves, etc. The organic content is highly variable, but is usually less than 14 lb/ft3. The levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present. Absorbents were added if moisture was detected in any wastes. No explosive or pyrophoric materials should be in this waste. Depending on when the wastes were packaged, the individual waste items may be contained in plastic, metal, or glass containers. Some of the containers are 2R containers. The containers are placed inside 55-gallon drums lined with two plastic liners. Some of the containers are wrapped in plastic, and others are placed directly into the drums. Oil-Dri absorbent is added if moisture is present.	Argonne National Laboratory-West and Idaho Chemical Processing Plant	2	1	2	3
3	1	311	ID-INL-155T	155	SCRAP	This waste stream, generated at Idaho National Engineering Laboratory, consists of a plastic glovebox, a hydraulic pump containing oil, vacuum pumps, centrifuges, tools, and experimental fuel capsules. The presence of hazardous materials is not known, but some absorbed oil is likely. Organic content of the box may exceed 6 lb/ft3. The levels of dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present, except for the hydraulic pump oil in the box. No explosive or pyrophoric materials should be in this waste. The waste was placed directly into prepared drums or boxes, or packaged in 1-gallon cans which were placed in prepared drums. The waste was generated in 1975 and 1979. Some of the waste is double wrapped in plastic. It is not known if the box is fiberglass-reinforced polyester (FRP) coated.	Idaho National Engineering Laboratory	2	1	3	3
3	1	312	ID-INL-157T	157	MISCELLANEOUS SOURCES	There is no descriptive or constituent information available for this waste, which was generated at ANL-W.	Idaho National Engineering Laboratory	3	2	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	320	ID-MDO-801T	801	RAGS, PAPER, WOOD, ETC.	This waste stream is from Mound Laboratory and consists of line-generated cloth rags and Kimwipes, and limited amounts of wood and cardboard tubes. Limited amounts some other combustible wastes (gloves, plastic, etc, Content Codes 802, 804, and 812) may also be present. These wastes are from D&D activities at the Plutonium Processing and Research buildings. Waste was shipped only in 1977. Presence of hazardous materials in the waste stream is not known. Limited amounts of waste may be damp. The average waste organic material content usually exceeds 14 lb/ft3 for drums. Combustibles in the waste exceed 25 volume percent. Levels of fines from glovebox cleaning should be within WIPP-WAC limits. There should be no sludges, free liquids, explosives, compressed gases, pyrophoric, toxic, or corrosive materials. Combustibles were packed into 1-gal plastic coated cardboard cartons. Each carton was labeled, assayed and bagged into a sleeve bag which holds 5 cartons. Up to eight sleeve bags were placed in each drum. Drums were prepared according to post-1972 procedures.	Mound Laboratory	1	1	2	3
3	1	135	ID-MDO-802T	802	DRY BOX GLOVES AND O-RINGS	This waste stream is generated at Mound Laboratory and consists of neoprene dry box (glovebox) gloves, neoprene O-rings, and lead-lined gloves. Limited amounts of waste from Mound Content Codes 801, 804, and 812 may be included.	Mound Laboratory	2	1	2	3
3	1	152	ID-MDO-803T	803	METAL, EQUIPMENT, PIPES, VALVES, ETC.	This waste comes from Mound Laboratory and consists of stainless steel, carbon steel, and small amounts of aluminum-metal wastes in the form of valves, piping, wrenches, nuts, bolts, stainless steel tubing, spatulas, pans, hotplates, ringstands, etc. Limited amounts of combustible and noncombustible wastes are also present from Content Codes 810, 811, 812, 813, 814, 826, and 832. Content Code 832 is liquid mercury. Content Code 812 is spent ion-exchange resin. Most of the waste is metal waste that is primarily from D&D operations. Some of the metals were leached with nitric acid, ultrasonically cleaned, and dried to remove above-discard amounts of plutonium. Waste is packaged in 1-gallon, plastic coated cardboard cartons which are in turn placed in two layers of PE bags and then put into a 55-gallon drum. Some large metal waste is taped on the rough edges and sealed in two layers of plastic and then placed into a 55-gallon drum. Drums have drum rigid liners and a drum bag. Each carton is individually assayed. Contaminated elemental mercury from Content Code 832 must be segregated. The specific locations, by drum, of waste cartons from Content Code 832,mercury, are known. Therefore, the waste drums containing mercury will be easily identified and the mercury will be removed.	Mound Laboratory	3	1	2	3
3	1	117	ID-MDO-805T	805	ASBESTOS FILTERS	This waste stream, generated at Mound Laboratory, consists primarily of HEPA filters of various sizes. The filter frames are usually pressed hardboard, but a limited number are metal. The filter media is asbestos. The waste stream may include limited amounts of other combustibles from Content Codes 803, 810, 813, 814, 825, or 832. Although there may be some organic material, it should be less than 14 lb/ft3 for drums. Significant amounts of respirable fines may be present. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be in the waste, except for some residual amounts of nitric acid. The waste is contained in drums. Filters are packaged in 1-gallon plastic coated cardboard cartons, one or two filters per carton. Some individual filters are individually bagged inside the cartons. Each carton is individually bagged, assayed, and contained in a sleeve bag with up to four other cartons. Up to eight sleeve bags will fit into a prepared drum. Drums were prepared and packed according to the usual post-1972 procedures.	Mound Laboratory	2	1	2	1
3	1	128	ID-MDO-810T	810	GLASS, FLASKS, SAMPLE VIALS, ETC.	This waste stream, generated at Mound Laboratory, consists mostly of whole and broken glassware and glass sample vials. The majority of the glass is pyrex. Limited amounts of other noncombustibles, material similar to that in Content Codes 803, 805, 811, and 826 may be present. Even though some of the glassware is broken, fines should not exceed WIPP-WAC limits for repirable or dispersed fines. No inorganic sludges, no explosive, pyrophoric, or corrosive materials should be in the waste. Most of the glassware is broken into pieces about 1 inch in diameter to reduce total volume. The material is packaged into 1 or 2-quart metal cans with lids. Each can is assayed for plutonium content and then placed with up to four other cans into a sleeve bag, which is sealed with tape. Up to five sleeve bags are placed inside a drum. Each drum is lined with a 90-mil drum liner, which is lined with a PE drum bag. Plywood spacers are placed between the rigid liner lid and the drum lid.	Mound Laboratory	3	1	2	2

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
3	1	45	ID-MDO-811T	811	EVAPORATOR AND DISSOLVER SLUDGE	This waste stream, generated at Mound Laboratory, consists of dry evaporator and dissolver sludge and insoluble residue. The consistency ranges from powder to sand-like particles. Limited amounts of other noncombustible wastes including Content Codes 803, 805, 810, 813, 814, 826, and 832 may be included. A few containers may have limited amounts of beryllium-contaminated wastes including glass, paper, gloves, and sample precipitates. The drums contain free liquids. The expected organic content in the drums is less than 14lb/ft3. No explosive, pyrophoric, or corrosive materials should be in the waste. After removal from the bottom of dissolver pots, the dried sludge is rinsed with nitric acid and dried on a hotplate. Dried sludges are packaged in 1/2-gallon metal cans and sealed in a PE bag, or else packed in 1/2-gallon plastic-coated cardboard cartons and sealed in a PE bag. Each container is assayed and placed in PVC or PE sleeve bags. Sleeve bags can hold up to 5 containers per bag. Up to 8 sleeve bags are placed in each prepared 55-gallon drum. Drums are prepared according to post-1972 procedures, with plywood spacers as needed between on top of the rigid drum liner lid.	Mound Laboratory	3	1	2	2
3	1	118	ID-MDO-813T	813	GLASS FILTERS AND FIBERGLASS	This waste stream, generated at Mound Laboratory, consists primarily of spun glass filters and fiberglass glovebox prefilters. The waste may include limited amounts of other noncombustibles from Content Codes 803, 805, 810, 811, 813, 814, or 825. The organic content should be less than 14 lb/ft3. No sludges or free liquids should be present. No explosive, pyrophoric, or corrosive materials should be present. The waste is contained in drums. Filters are packaged in 1-gallon plastic coated cardboard cartons. Each carton is individually bagged, assayed, and contained in a sleeve bag with up to four other cartons. Up to eight sleeve bags will fit into a prepared drum. Drums were prepared and packed according to the usual post-1972 procedures.	Mound Laboratory	2	1	2	3
3	1	179	ID-MDO-814T	814	CONTAMINATED MERCURY OR GRAPHITE CRUCIBL	This waste stream was generated at Mound Laboratory. The waste consists of graphite crucibles and electrodes. Cartons of mercury may be included in some waste drums, but they should be easily removeable and are not included in the waste constituents. The Waste matrix composition listed is taken from Item description code (IDC) 300, a similar waste type. Organic content should be less than 14 lb/ft3. The waste is noncombustible, but if pulverized and well mixed it will burn. Fines should not exceed WIPP-WAC limits. No sludges or free liquids should be present. The Oil-Dri should meet WIPP immobilization standards. No explosive or pyrophoric materials should be in this waste. The material is contained in 55-gallon drums. Inside the drums, graphite waste is packaged in 1-gallon plastic coated cardboard cartons and/or 1/2-gallon metal cans, contained inside plastic bags. Each metal can may be sealed inside another roll-seam can. The drums are lined with 90-mil drum liners.	Mound Laboratory	3	1	2	3
3	1	321	ID-MDO-815T	815	CLASSIFIED PARTS	There is no content information for this waste stream, which was generated at Mound Laboratory. It is thought that there may be classified parts in this waste.	Mound Laboratory	3	1	2	3
3	1	168	ID-MDO-824T	824	NONCOMBUSTIBLE EQUIPMENT BOXES	This waste stream, generated at Mound Laboratory, consists of large, noncombustible wastes such as tanks (stainless steel and tantalum), piping, ducting, conduit, electric motors, pumps, metallurgical presses, lathes, dissolvers, evaporators, furnaces, ladders, vacuum sweepers, 24 x 24 x 12 inch HEPA filters, fume hoods, gloveboxes, plexiglass glovebox windows, and floor tile. Limited amounts of combustible wastes (plastic tanks, fiberglass gloveboxes, plastic contamination control tents, etc.) are also included. Boxes filled with HEPA filters and cartons of resins may both contain excessive fines. Combustibles may exceed 25 volume percent in some boxes. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Some emptied cylinders with opened valves and punctured aerosol cans are included in the waste. All of this waste is packaged in standard or oversized boxes. Each item is generally wiped with wet rags and single or double contained in plastic. Open ends or openings are sealed. Oils or other liquids are drained from any equipment prior to packaging. Florco absorbent is added to each box for residual liquids. Polyurethane foam is added if necessary to help stabilize large equipment. Some boxes contain smaller plywood boxes, cartons, cans, or drums of waste items. All plywood boxes are coated with fiberglass-reinforced polyester (FRP). Oversized boxes are not lined with plastic or cardboard liners.	Mound Laboratory	2	1	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unlnown
3	1	88	ID-MDO-826T	826	COMBUSTIBLE EQUIPMENT BOXES OR FLOOR SWE	This waste stream, generated at Mound Laboratory, includes two different types of waste depending on when the waste was generated. Prior to 1980, this content code was used for glovebox floor sweepings and rust. The actual amount of floor sweepings is small. After 1981, this content code is used for large, combustible waste items such as plastic tanks, plexiglass shielding and windows, wood, and fiberglass conveyor glovebox sections. These types of large combustible wastes were included in Content Code 824 prior to 1980. Limited amounts of smaller combustibles such as shoe covers and surgical gloves are also included. The organic content exceeds 6 lb/ft3. The waste is 100 volume percent combustible. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. All of this waste is packaged in standard boxes. Each item is generally rinsed with water, wiped with wet rags and single or double contained in plastic. Some items were placed directly into boxes without additional containment, depending on contamination levels. Floor sweepings are contained in 1-gallon plastic-coated cardboard cartons. Florco absorbent is added to each box for residual liquids. Each box is assayed using a box counter, and spot radiation and contamination checks are also done.	Mound Laboratory	1	1	2	3
3	1	89	ID-MDO-827T	827	COMBUSTIBLE EQUIPMENT DRUMS	There is no content information on this code. This waste is probably like Content Code 826 (combustible equipment boxes) from Mound Laboratory except that it is smaller items which fit into drums instead of boxes. ID-MDO-827T contains both low-level (Interval 0) and transuranic (Intervals 1 through 34) waste. Interval 0 information is included in the ALLW appendix, intervals 1-34 in the TRUW appendix.	Mound Laboaratory	1	1	2	3
3	1	67	ID-MDO-834T	834	HIGH-LEVEL ACID	This waste comes from Mound Laboratory. It consists of acid liquids, mainly nitric, absorbed onto a clay called Florco. The Florco is then placed in a drum bag in a drum lined with a 90-mil poly liner. Analytical assay values are available for each drum.	Mound Laboratory	3	1	2	2
3	1	68	ID-MDO-835T	835	HIGH-LEVEL CAUSTIC	This waste comes from Mound Laboratory. It consists of caustic waste and neutralized waste liquids, absorbed onto a clay called Florco. The Florco is then placed in a drum bag in a drum lined with a 90-mil poly liner. Analytical assay values are available for each drum.	Mound Laboratory	3	1	2	2
3	1	69	ID-MDO-836T	836	HIGH-LEVEL SLUDGE/CEMENT	This waste is from Mound Labs. The waste consists of shower water, decontamination water, cooling water, and some acids and caustics which have been solidified in portland cement. The cement is poured into a drum lined with a 90-mil poly liner. Analytical assay values are available on a batch basis.	Mound Laboratory	3	1	2	2
3	1	198	ID-MDO-842T	842	CONTAMINATED SOIL	This waste, generated at Mound Laboratories, consists of soil, including small rocks and pebbles, generated from cleanup of a leak. All soil waste was dry when packaged. A few waste boxes also include picks, shovels, metal cans, rubber gloves, booties, respirators, plastic, and possibly an air hammer and chisel. Soils waste was packaged in small, plastic lined plywood boxes (42 x 20 x 39 inch) other waste was then placed on top of the soil before the box was sealed. Four of the small boxes were then packaged in a standard larger waste box (4 x 4 x 7 feet) lined with fiberglass-reinforced polyester. Assay was performed using radiochemical analysis on core samples taken from the contaminated area.	Mound Laboratory	3	1	2	3
3	1	322	ID-MDO-847T	847	LOW SPECIFIC ACTIVITY (< 100 nCi/g) COMB	This waste stream is from Mound Laboratory and consists of nonline generated combustible wastes such as plastic sheeting, paper, reagents, gloves (rubber,cloth), plastic bottles, wood, paper suits, and shoe covers. About 75% of the waste is compacted. The waste may be either dry or damp. The average waste organic material content usually exceeds 14 lb/ft3 for drums. Levels of fines should be within WIPP-WAC limits. There should be no sludges, free liquids, explosives, compressed gases, pyrophoric, toxic, or corrosive materials. Combustibles were packed into plastic bags which were sealed and compacted inside prepared drums. The compaction ratio is about 4:1. About 25% of the waste is not compacted, due to the presence of noncompactible items such as wood. Drums were prepared according to post-1972 procedures. Prior to January 1982, drums were scanned for gamma radiation and assayed if readings above background levels were detected. After 1982, all drums were assayed.	Mound Laboratory	1	1	2	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	323	ID-MDO-848T	848	LOW SPECIFIC ACTIVITY (< 100 nCi/g) NONC	This waste stream, generated at Mound Laboratory, consists of nonline generated noncombustible wastes such as tools, pipe, equipment, metal, glass, concrete, plaster, bricks, and dirt. Limited amounts of combustible wastes such as paper, rags, etc. are also included. Fines which may be present include soil, plaster, and concrete chips. The organic content is less than 14 lb/ft3. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. This waste stream is packaged in drums. Depending on size and contamination levels of individual items, the waste is contained in one or two plastic bags or placed directly into prepared waste drums. Each drum is lined with a 90-mil liner and a plastic bag. Florco absorbent is added to the bottom of the drum if dampness is suspected. Plywood spacers are added as needed on top of the liner lid. Each barrel is assayed by a drum counter or by portable gamma detecting instruments.	Mound Laboratory	3	1	2	3
3	1	39	ID-OFS-111T	111	RESEARCH GENERATED WASTE NONCOMPACTIBLE	This waste includes waste generated at ANL-East and certified (for WIPP) solid wet sludge from the Rocky Flats Plant. The ANL-E waste is derived from research activities performed in a laboratory environment. The waste includes concrete and laboratory apparatus. The waste is packaged in 55-gallon drums or in SWBs. The certified solid wet sludge is cemented or dewatered sludge precipitated from aqueous waste treatment processes. Soils that are not contaminated with organic chemicals are also included. Rocky flats waste included in 111 is IDC 007, Building 374 solidified sludge. IDC 007 consists of immobilized low-level mixed waste materials from decontamination-precipitation and neutralization processes in the Building 374 Liquid Waste Treatment Facility. The wastewater treatment operation includes neutralization, radioactive decontamination (precipitation), filtration, evaporation, spray drying, salt immobilization, and filtrate sludge immobilization. The sludge from the rotary drum vacuum filter has a dry appearance but is still very moist. The dried sludge was transferred from the dryer directly into a 55-gallon drum. The sludge was dried, or had portland cement and diatomite added to absorb liquids. Note: Waste matrix composition listed is for Rocky Flats Waste.	Rocky Flats Plant and Argonne National Laboratory-East	3	1	2	3
3	1	165	ID-OFS-121T	121	DECONTAMINATION AND DECOMMISSIONING WAST	This waste, generated at Argonne National Laboratory-East and Rocky Flats. The ANL-East waste is derived from decontamination and disposal of facilities and ancillary systems. The composition of the waste is unknown. The waste generated at Rocky Flats contains mainly Benelex which is a dense, laminated, lignocellulose hardboard made from wood chips and particles (Masonite Corp., Type 402). The Benelex is generally 2 inches thick. Some of the Benelex has lead shielding attached to it. Metal hinges and angle iron strongbacks are also present. Plexiglass is the other major constituent in the waste. The plexiglass thickness ranges from 2 to 4 inches. Both the Benelex and the plexiglass are combustible. The wase is packaged in standard RFP drums and boxes. Waste matrix composition listed is based on the opening and examination of several drums of IDC 302 waste. More than 94% ofthis waste is in boxes, where a larger percentage of benelex (large pieces) can be expected.	Argonne National Laboratory-East and Rocky Flats Plant	3	1	2	3
3	1	295	ID-RFO-000T	0	NOT RECORDED - UNKNOWN	This waste stream was received prior to 1973. As container specific information was not entered into the database prior to 1973, these wastes are uncategorized. It is expected to be similar to other Rocky Flats wastes received since 1973.	Mostly Rocky Flats Plant	2	2	3	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	38	ID-RFO-001T	1	FIRST STAGE SLUDGE	Waste consists of a wet sludge produced from treating aqueous process wastes, such as ion exchange column effluent, distillates, and caustic scrub solutions generated by Plutonium Recovery Operations (Building 771). Portland cement is added to the waste package for absorption of free liquids. Waste drums may periodically contain surgeons' gloves, glovebox gloves, etc. Since the fall of 1979, first-stage sluge (IDC 001) and Second stage sludge (IDC 002) have been combined into Content Code 1 - Combined sludge. Sludge is produced by treating aqueous wastes by the carrier precipitation process. Aqueous wastes are made basic, if necessary, with sodium hydroxide. Radioactive elements such as plutonium and americium are chemically precipitated from the liquid waste. Treatment chemicals include ferric sulfate, calcium chloride, magnesium sulfate, and flocculating agents. The treatment process produces a precipitate of the hydrated oxides of iron, magnesium, aluminum, silicon, etc., which also carries the hydrated oxides of plutonium and americium. The precipitate or slurry is filtered to produce a sludge containing 50 to 70 weight percent water. Liquid wastes were analyzed for fissile content prior to release from Building 771 and 774, and were retained at Building 771 for further treatment if contaminated with above-discard amounts of plutonium.	Rocky Flats Plant	3	2	2	2
3	1	41	ID-RFO-002T	2	SECOND STAGE SLUDGE	Waste consists of a wet sludge produced from treatment of all other plant radioactive and/or chemical contaminated wastes and further treatment of the first-stage effluent. Portland cement was added to the waste package for absorption of free liquids. Second-stage sludge drums packaged prior to 1973 may contain other waste such as electric motors, bottles of chemical (usually liquid) wastes, mercury and lithium batteries, and small amounts of contaminated mercury in pint bottles. Radioactive sources were also periodically included in second-stage drums through 1979. Since the fall of 1979, Second stage sludge (IDC 002) have been combined into Content Code 1 - Combined sludge. Content code 2 is no longer used. Sludge is produced by treating aqueous wastes by the carrier precipitation process. Aqueous wastes are made basic, if necessary, with sodium hydroxide. Radioactive elements such as plutonium and americium are chemically precipitated from the liquid waste. Treatment chemicals include ferric sulfate, calcium chloride, magnesium sulfate, and flocculating agents. The treatment process produces a precipitate of the hydrated oxides of iron, magnesium, aluminum, silicon, etc., which also carries the hydrated oxides of plutonium and americium. The precipitate or slurry is filtered to produce a sludge containing 50 to 70 weight percent water. Liquid wastes were analyzed for fissile content prior to release from Building 771 and 774, and were retained at Building 771 for further treatment if contaminated with above-discard amounts of plutonium.	Rocky Flats Plant	3	2	2	2
3	1	236	ID-RFO-003T	3	ORGANIC SETUPS, OIL SOLIDS	Organic setups are produced from treatment of liquid organic wastes generated by various plutonium and nonplutonium operations. The organic wastes are mixed with calcium silicate to form a grease of paste-like material. Small amounts of oil-dri absorbent are usually mixed with the waste. Organic wastes such as degreasing agents (primarily trichloroethane), lathe coolant (machining oil and carbon tetrachloride), and hydraulic oils are generated primarily by plutonium fabrication operations. Other organic wastes include carbon tetrachloride; trichloroethylene; hydraulic, gearbox, and spindle oils; and trace concentrations of miscellaneous organic laboratory wastes. (organophosphates, nitrobenzene, etc.) In addition, unknown volumes of oil containing polychlorinated biphenyls (PCB) were processed with other organic wastes until 1979. Degreasing solvents generated by Building 444 operations are contaminated with beryllium.	Rocky Flats Plant	3	1	1	3

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	65	ID-RFO-004T	4	SPECIAL SETUPS (CEMENT)	This waste, generated at Rocky Flats Plant, consists of liquids absorbed on a cement mixture. The liquid wastes are not compatible with aqueous treatment processes and are handled separately due to their plutonium complexing nature. The majority of complexing chemical wastes are generated by various operations at Building 771, Plutonium Recovery operations. All waste are processed by aqueous waste treatment, building 774. The complexing chemicals include some alcohols, organic acids, and versenes (trademark for a series of chelating agents based on EDTA). All liquids are analyzed or assayed prior to release to Building 774 for treatment. Only below-discard contaminated wastes are released for processing. Above discard contaminated wastes are processed by plutonium recovery operations. The cement mixture used for absorbing complexing liquid wastes is composed of approximately 190 lb of Portland cement and 50 lb of pipe insulation cement, such as magnesia cement. The cements are placed in a prepared 55-gallon drum; the drum is them placed on a drum roller and rolled to ensure mixing of the cements. All liquid wastes are made basic prior to adding them to the cement mixture. Approximaterly 100 liters of liquid waste is then poured on the cement mixture and allowed to solidify. Aproximately 10 to 15 lb of portland cement is then added on top of the cemented liquid waste before the o-ring bag is removed from the glovebox. Since 1972, drums have been inspected for free liquids, proper packaging, and the use of proper content code. One to two quarts of oil-dri was placed on top of the outer, sealed polyethylene drum bag after inspection. In 1982, vermiculite replaced oil-dri to fill the remaining space between the outer, sealed polyethylene drum bag and the top of the rigid liner. Some drums may be filled with the empty polyethylene bottles used to transport the liquid waste to Building 774. A small amount of portland cement is added to each bottle before placement in a drum.	Rocky Flats Plant	3	1	2	2
3	1	227	ID-RFO-005T	5	EVAPORATOR SALTS	Waste is generated at Rocky Flats Plant from aqueous waste treatment in building 774. Waste consists of a salt residue generated from concentrating and drying liquid waste from the solar evaporation ponds. The approximate chemical makeup of the salt is 60% sodium nitrate, 30% potassium nitrate, and 10% miscellaneous. Limited amounts of other wastes such as surgeons' gloves, paper, rags, and metal may be found in the waste drums. Portland cement was added to damp or wet salt when necessary. The majority or salt drums in storage at the INEL should be contaminated with <10 nCi/g TRU. Salt waste is no longer shipped to the INEL. Since 1972, drums have been inspected for free liquids, proper packaging, and use of the proper content code. After inspection, approximately 1 to 2 quarts of Oil-Dri was placed on top of the outer sealed polyethylene drum bag.	Rocky Flats Plant	3	1	2	3
3	1	44	ID-RFO-007T	7	BLDG 374 DRY SLUDGE	Building 374 solidified sludge consists of immobilized low-level mixed waste materials from decontamination-precipitation and neutralization processes in the Building 374 Liquid Waste Treatment Facility. The wastewater treatment operation includes neutralization, radioactive decontamination (precipitation), filtration, evaporation, spray drying, salt immobilization, and filtrate sludge immobilization. The sludge from the rotary drum vacuum filter has a dry appearance but is still very moist. The dried sludge was transferred from the dryer directly into a 55-gallon drum. The resulting waste consisted of dispersible fines and was assigned IDC 007.	Rocky Flats Plant	3	1	2	2
3	1	63	ID-RFO-112T	112	SOLIDIFIED ORGANICS	Certified (for WIPP) TRU solid organic waste consists of cemented or absorbed organic liquids from production or laboratory processes. The content code certifiably packaged as112 includes IDC 003.	Rocky Flats Plant	3	1	2	2
3	1	40	ID-RFO-113T	113	SOLID LAB WASTE	Certified solid lab waste consists of cemented or absorbed neutralized aqueous laboratory waste and includes some waste from IDCs 004 and 292. Waste matrix composition listed is for IDC 004 waste, which accounts for most of the waste in this content code.	Rocky Flats Plant	3	1	2	2
3	1	64	ID-RFO-114T	114	SOLIDIFIED INORGANIC PROCESS SOLUTION	Certified (for WIPP) TRU solid inorganic process solution waste consists of cemented inorganic particulates of sludge-like (not chemically precipitated) wastes from plutonium recovery operations. The waste is packaged in 55-gallon drums or SWBs. Content code 114 includes some waste form IDCs 292 and 432. Waste matrix composition listed is for Item Description Code (IDC) 292, the bulk of the waste. The waste is assigned matrix parameter code (mpc) S3123, based on IDC 292. The IDC 432 portion of the waste stream is mpc S3211.	Rocky Flats Plant	3	1	2	2

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	82	ID-RFO-116T	116	COMBUSTIBLE WASTE	Certified TRU (for WIPP) combustible waste consists of cellulosic plastic or cloth waste from various processes. The content codes certifiably packaged and included in 116 are 330, 336, 337, and 491.	Rocky Flats Plant	1	1	2	3
3	1	147	ID-RFO-117T	117	METAL WASTE	Certified TRU metal waste consists of discarded metal. The IDCs certifiably packaged and included in 117 are 320, 321, 480, and 488.	Rocky Flats Plant	3	1	2	3
3	1	124	ID-RFO-118T	118	GLASS WASTE	Certified TRU (for WIPP) glass waste consists of discarded labware, windows, containers or raschig rings from various processes. The IDCs certifiably packaged and included in 118 are 440, 441, and 442. Waste matrix composition listed is for IDC 440. For IDCs 441 and 442, the "Other Glass" matrix would be mostly raschig rings.	Rocky Flats Plant	3	1	2	2
3	1	110	ID-RFO-119T	119	HEPA FILTER WASTE	Certified TRU (for WIPP) HEPA filter waste consists of HEPA filters or processed filter media from filter change operations. The IDCs certifiably packaged and included in 119 are: 376 and 490.	Rocky Flats Plant	2	1	2	1
3	1	97	ID-RFO-122T	122	INORGANIC SOLID WASTE	Certified TRU (for WIPP) inorganic solid waste consists of waste such as insulation, firebrick, and concrete. The IDCs certifiably packaged and included 122 are 371, 374, 377, and 422. The majority of the waste in this content code is waste generated during maintenance/stripout activities. (i.e. replacement of firebrick or insulation.) Waste matrix composition listed is for IDC 374, which makes up the bulk of the waste in this content code.	Rocky Flats Plant	3	1	2	3
3	1	132	ID-RFO-123T	123	LEADED RUBBER	Certified TRU leaded rubber waste consists of discarded leaded glovebox gloves and leaded aprons. The IDC certifiably packaged and included in 123 is 339.	Rocky Flats Plant	2	1	2	2
3	1	167	ID-RFO-241T	241	AMERICIUM PROCESS RESIDUE	This waste stream, generated at the Rocky Flats Plant, consists of piping, flanges, valves, tools, equipment, PVC piping, glassware (flasks, broken ion exchange columns, etc.), glass filters, PE bottles, leaded glovebox gloves, paper, and plastics. Wastes were shipped only in 1972 and 1973, from renovation of the americium recovery line. Some of the containers are lead-lined. Dispersible fines should be within WIPP-WAC limits. No sludges or free liquids should be present. No explosive or pyrophoric materials should be in this waste. Some dried residue of 7 N nitric acid, hydrochloric acid, and ammonium thiocyanate may be present. Smaller waste items are single and double contained in PE or PVC bags. Most of the bagged waste was placed in 13-inch high by 15.5-inch diameter Fibre-Paks. Larger items are placed directly inside 55-gallon drums. Fibre-Paks are usually wrapped with lead tape. Two Fibre-Paks fit in each drum. Most drums were lead shielded with 1/16- to 1/8-inch thick lead sheeting. Each drum was assayed. The waste matrix composition listed is based on drum sampling. No glassware or glass filters were contained in the sampled containers.	Rocky Flats Plant	2	2	2	3
3	1	42	ID-RFO-292T	292	CEMENTED SLUDGE	This waste stream, generated at Rocky Flats Plant, consists of sludge from the incinerator off-gas system, recovery building filter plenums, pumps, etc. Portland cement is added to absorb free liquids. The sludge may contain a limited number of surgical gloves. Content Code 292 replaced Code 290 in 1974. Before 1977, sludge was sealed in PVC bags, double-contained in plastic and placed in 1-gallon metal paint cans. Portland cement was added to the bottom and top of the can. After 1977, sludge was placed in 1-gallon PE bottles with layers of portland cement. Each can (or bottle) was assayed and placed in groups of about 25 into prepared 55-gallon drums. Drum preparation was in accordance with pre and post 1972 procedures. Starting in 1982, vermiculite replaced Oil-Dri as the material between the top of the waste material and the drum liner lid.	Rocky Flats Plant	3	1	2	2

Table 1. INEL transuranic mixed and non-mixed waste identification and description information.

9/17/95

Waste Category 3=TRUW	Mixed Waste 1=mixed 2= non-mixed	Key Code	Wastestream Identifier Code	Content Code	Waste Stream Name	Description	Generator Site	Combustibility 1=>90% 2=10-90% 3=<10%	Rad Level 1=CH 2=some RH	PCBs 1=expected 2=not expected	Asbestos 1=expected 2=not expected 3=unknown
3	1	176	ID-RFO-300T	300	GRAPHITE	This waste stream, generated at the Rocky Flats Plant, consists of graphite molds used in casting plutonium metal. The waste may also include small amounts of surgical gloves. The graphite is in the form of broken mold pieces. Some of the graphite has been scarfed or wire-brushed to remove above-discard deposits of plutonium. The graphite molds are almost pure carbon and should be inert in storage. The waste is noncombustible, but if pulverized and well mixed it will burn. Fines are not packaged with the waste. Although breakage and fines may result after packaging, levels of fines should not exceed WIPP-WAC limits. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Graphite pieces may be packed directly into prepared 55-gallon drums or else first packed inside Fibre-Paks. The Fibre-Paks are 13 inches high by 15.5 inches in diameter. Sealed Fibre-Paks are sealed inside single (PVC) or double (PVC and PE) bags. Two Fibre-Paks are placed in each prepared 55-gallon drum. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures; and, since 1982, vermiculite instead of Oil-Dri was placed on top of the outer sealed PE drum bag.	Rocky Flats Plant	3	1	2	3
3	1	177	ID-RFO-301T	301	GRAPHITE CORES	This waste stream, generated at the Rocky Flats Plant, is similar to graphite molds, Content Code 300. A graphite core is part of the shaped graphite mold used to cast plutonium metal. Some graphite molds are also included in this content code. This content code has not been used since 1977. The graphite has been broken into pieces, and some of the graphite has been scarfed or wire brushed to remove any above-discard deposits of plutonium. The graphite cores are almost pure carbon and should be inert in storage. The waste is noncombustible, but if pulverized and well mixed it will burn. Fines are not packaged with the waste. Although breakage and fines may result after packaging, levels of fines, should not exceed WIPP-WAC limits. The waste is packaged with no free liquids, sludges, explosives, compressed gases, pyrophoric or corrosive materials. Graphite core pieces may be packed directly into prepared 55-gallon drums or else first packed inside Fibre-Paks. The Fibre-Paks are 13 inches high by 15.5 inches in diameter. Sealed Fibre-Paks are sealed inside single (PVC) or double (PVC and PE) bags. Two Fibre-Paks are placed in each prepared 55-gallon drum. Drums were packed according to the usual pre-1972 and post-1972 procedures. Each drum was assayed. Since 1972, the drums were also processed according to inspection and sealing procedures. Oil-Dri was placed on top of the outer sealed PE drum bag.	Rocky Flats Plant	3	1	2	3
3	1	53	ID-RFO-302T	302	BENELEX AND PLEXIGLASS	This waste, generated at Rocky Flats Plant, consists of Benelex, which is used for neutron shielding, and Plexiglas glovebox windows. Lead sheeting (1/8 to 1/4 in. thick) may be attached to some benelex pieces. Benelex was usually coated with fire-retardant paint. In addition to Plexiglas, other types of glass such as leaded-glass may be present in the waste. The waste may include limited amounts of surgeons' gloves, metal hinges on Benelex gloveport doors, pieces of angle iron attached to larger pieces of Benelex, and rubber gaskets from glovebox windows. Content code 302 replaced content code 464 during 1973. The majority of waste drums will contain pieces of benelex (gloveport doors, etc.) generated from routine maintenance and renovation projects conducted primarily in 1972. Plexiglas and other types of glass may be found mixed in with the benelex and/or segregated and contained in a limited number of waste drums. Pieces of benelex waste were usually placed directly into prepared 55-gallon drums. Any contaminated Benelex was usually contained in plastic bags or wrapped in plastic sheeting. Plexiglas windows were usually contained in plastic before being placed in a prepared 55-gallon drum. Oil dri may have been added to the waste drums. The waste boxes were generated during 1973 and 1974 and are believed to contain larger pieces of benelex shielding on angle iron frames that were removed during final fire cleanup operations in building 776. It is believed that the benelex came from the south foundry line in building 776, which was not directly involved in the 1969 fire and was decontaminated and placed back in operation. The waste matrix composition listed is based on opening and examination of several drums of IDC 302 waste. More than 94% of this waste is in boxes, where a larger percentage of benelex (large pieces) can be expected.	Rocky Flats Plant	2	1	2	3