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SOLID WASTE AND MATERIALS SYSTEMS ALTERNATIVES STUDY

VOLUME III

APPENDIX A

Process Logic, Computer Modeling and Output

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APPENDIX A

A.1 Model System Overview

A.2 Alternative 1 Computer Modeling & Output

A.3 Alternative 2 Computer Modeling & Output

A.4 Alternative 3 Process Logic

A.5 Alternative 4 Computer Modeling & Output

A.6 Alternative 5 Computer Modeling & Output, Process Logic

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SOLID WASTE AND MATERIALS SYSTEMS ALTNERATIVES STUDY

VOLUME III

APPENDIX A.1
MODEL SYSTEM OVERVIEW

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A.0 APPENDIX A - COMPUTER MODEL DEVELOPMENT AND OUTPUT

This appendix provides an overview of the simulation modeling effort required to support analysis for the Tri-Party Agreement M-33 milestone. This information is organized into five main sections, A.1 through A.5. The first section, A.1, provides the model system overview, describing the modeling methodology and input and output data. Each of the remaining four sections, A.2 through A.5, provide process assumptions, flow diagrams, throughput data, and storage results for each of the four alternatives, respectively.

A.1 MODEL SYSTEM OVERVIEW

The model used for this analysis was a discrete event simulation model coded in the SIMSCRIPT II.5 simulation language for OS/2. A generic model architecture was established by using the Solid Waste Projection Model (SWPM) developed by PNL. The SWPM provided a foundation uniquely suited for this study as it simulates a similar waste processing system defined for the Hanford solid waste system. Because the SWPM allows waste to be processed given constrained processing capacities and dynamically determines storage facility levels due to constrained processing capabilities, the SWPM architecture was modified to suit the unique nature of this modeling study. The result was a common architecture that was used for modeling each system alternative presented in this study. For each alternative a unique model was coded based on that alternative's treatment strategy using the common architecture as a basis for specialization.

Discrete event simulation treats time as discrete increments with events that are scheduled at specific points in the time continuum being modeled. The time continuum was defined as the beginning of year 1994 until the end of year 2028. Waste entities travel through the model based on a specific treatment strategy (functional flow diagram) for that waste stream. Each waste entity undergoes periods of delay until the waste encounters a final disposal state. This delay can results from either storage delays or processing delays. Storage delays may be due to a treatment facility not being functional or due to the treatment facility capacity being used to process other waste. Processing delays occur when waste is being processed by a facility and is represented as a unit-time/m^3 of waste to complete the processing. The inverse of this delay, expressed in years, is the annual treatment capacity of a facility. This capacity, expressed as m^3/year, defines the constraint on a facility's ability to process waste and provides the basis for waste to dynamically compete for this limited processing capacity.

There are four major components of the model. These components are the waste volume input data, model parameters, the executable model, and the output data. When the executable version of the model is activated the two input data files are read automatically. The model simulates the processing of the waste for the entire time span being modeled. During this simulation, statistics on throughput and storage levels are collected at regular intervals. After the simulation is completed the statistics are written to data files where they are automatically imported into a database for storage and analysis. Each of these components is described briefly in the following sections.

A.1.1 Waste Volume Input Data

The waste volume input data consists of a single text file containing all the waste data that is processed by the model. The development of this data is described in Section 4.0 of this study. Primarily, this text file contains the following information: waste category (such as TRU), waste class (such as CH_TRU, CH_TRUM, CH_TRU_SUSPECT, etc...), container type (such as box, drum, etc...), and volume. In addition, this file contains the arrival schedule of waste volumes and attributes of the waste that indicate unique routing requirements. For example, TRU waste volumes that contain physical characteristics or hazardous constituents that require restricted waste management are routed accordingly.

Several attributes of the waste have been aggregated to a higher level to conserve computer memory usage by the model. The aggregation was conducted to a level that defines unique treatment paths for the waste based on the attributes of the waste streams. For example, specific container types, such as "BOX > 1000," "OTHER CYL," or "55 GAL DRUM," were reclassified as "BOX," "DRUM," "LARGE_BOX," or "OTHER" for modeling purposes.

A.1.2 Model Parameters

In addition to the waste volume input data, the model reads a parameters file to impose controls on the system. The most significant of these parameters are the treatment facility schedules and annual capacities expressed in m^3/year. The facility schedules reflect the first point in time that the facility can begin accepting waste and the last date that waste can be accepted by the respective facility. The parameters file also contains data on facility ramp-up characteristics or planned shutdown/slowdown activities in the schedule.

A.1.3 Fundamental Treatment Strategy (Executable Model)

For all the alternatives, functional flow paths were established. These functional flow diagrams (see Section 6.4 for an overview of the non-alternative-specific functional flow diagrams) define the lowest level of detail being modeled and identify the individual functions that are performed for each waste stream. A function is defined as a unique operation such as "assay" or "package waste for low level burial." A facility level of detail is defined as a processing facility such as "WRAP 1" or "RH Processing Facility" where several functions are contained.

The use of the functional flow diagrams allowed for each alternative to be based on the same treatment strategy. This common bases was important for comparing alternatives based on facility configurations and/or schedules. Assumption changes for each alternative were based on the processing facility configuration and/or schedule only, rather than based on the functional treatment strategy for each waste stream.

For each alternative the waste processing functions were grouped into different facility level configurations. At the facility level, the functions take on unique characteristics for that alternative. Namely the functions will have different start and end dates as well as different annual capacities. Each

of these alternative facility level configurations are described in Sections 6.4 through 6.8 of this report.

For modeling purposes, several additional functions have been added to each alternative to represent the entering and exiting volumes for each facility. Functions were also added where it was needed to aggregate the output data from the functional level to a facility level. The facility level data is required to assess cost and is not directly output by the model. To obtain the facility level data, the model output data is queried for each alternative.

A.1.4 Model Output Data

The model outputs a series of text files that are formatted for automatic importation into a database. The primary output files of interest are the annual storage levels and annual throughput values for each function. The other files contain quality assurance data for model developers. The following discussion, therefore, focuses on the storage and throughput data.

Annual storage volumes are reported for each storage facility defined in an alternative. These volumes are year-end levels in m^3 and are provided for each unique combination of waste class, container type, storage facility, and function. The function that is referenced in the storage output references the function that the particular waste volume is waiting for in storage. This volume then represents the storage queue (or waiting line) for that function. Storage output provided for each alternative in this study have been aggregated to reflect the volumes of storage in each storage facility by waste class.

Throughput values represent the total volume of waste, from the beginning of a year to the end of that year, that enters each function. The throughput statistics are provided for each unique combination of waste class, container type, and function. For this study, the model throughput results are aggregated to reflect the throughputs of the functions by waste class. Throughputs to functions which impose a volume adjustment to the waste volume show the incoming volume only. The volume adjustment appears for the throughput to the subsequent function. Therefore, effects of volume adjustments can be seen on down stream functions only.

The model output is imported into an Access 2.0 database for data analysis. This database provides a tool for directly comparing alternatives graphically through the use of the SWPM Graphical User Interface (GUI).

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SOLID WASTE AND MATERIALS SYSTEMS ALTNERATIVES STUDY

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APPENDIX A.2
Alternative 1 Computer Modeling & Output

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A.2 ALTERNATIVE 1 MODEL ASSUMPTIONS, FLOW DIAGRAMS, AND RESULTS

This section provides the waste processing assumptions, functional flow diagrams, and model results for Alternative 1. The first section, which addresses the waste processing assumptions, describes the assumptions associated with each of the functional flow diagrams presented in Section 6.3. These assumptions identify volume increases or decreases associated with waste processes, as well as waste routing splits based on percentages of the volume. The second section shows the functional flow diagrams for Alternative 1 which incorporate these assumptions. The model results of annual throughputs and storage levels that correspond with each of these diagrams are provided in the third section.

A.2.1. Assumptions Associated with Functional Flow Diagrams

The assumptions associated with the functional flow diagrams presented in Section 6.3 are waste stream specific. The waste stream specific assumptions follow.

A.2.1.1 Assumptions for Remote-Handled Transuranic Waste.

Incoming RH TRU waste considered "suspect" received a 3.0 increase to account for the overpack. The assumptions that apply to the functions for processing remote-handled transuranic waste follow:

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.6 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 37.5% was assumed to be the waste and 62.5% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to have no net external volume change.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.2.1.2 Assumptions for Contact-Handled Transuranic Waste in Large Containers and Drums Requiring Specialized Treatment.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.6. In addition, it was assumed that 37.5% of the volume exiting this function would be waste and the remaining 62.5% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Assay. After TRU waste assay, 15% of the "suspect" TRU waste volumes were assumed to be CH_LLMW.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.2.1.3 Assumptions for Remote-Handled Low Level Mixed Waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.7 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 41.2% was assumed to be the waste and 58.8% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have not net change in external volume.

- Waste Stabilization. Waste volumes requiring stabilization were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.2.1.4 Assumptions for Contact-Handled Low Level Mixed Waste in Large Containers.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal for Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.5% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

- WRAP 2A. It was assumed that any LLMW requiring non-thermal stabilization would be routed to WRAP 2A for final processing prior to disposal.

- Thermal Treatment. It was assumed that any LLMW requiring thermal destruction would be sent to a commercial thermal treatment facility for processing prior to disposal.

A.2.1.5 Assumptions for Greater Than Category 3 Low-Level Waste.

No assumptions were made for this waste.

A.2.1.6 Assumptions for Contaminated Metallic Sodium.

No assumptions were made for this material.

A.2.1.7 Assumptions for Unirradiated Uranium.

No assumptions were made for this material.

A.2.1.8 Assumptions for Miscellaneous Sources.

No assumptions were made for these waste and materials.

A.2.1.9 Assumptions for Cesium/Strontium Capsules.

No assumptions were made for this material.

A.2.1.10 High Level Waste Canisters

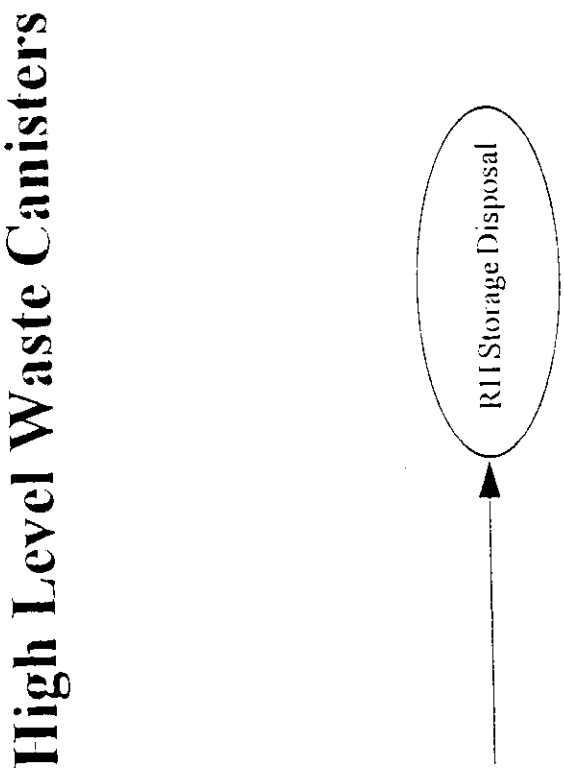
No assumptions were made for this waste.

A.2.2 Functional Flow Diagrams Including Assumptions for Alternative 1

Figures A.2-1 through A.2-1Z show the Alternative 1 functional flow diagrams. These flow diagrams include the assumptions defined in section A.2.1 and also incorporate additional functions added due to the requirements of the model to reflect the macro-level system. These functions include "Process Facility Receiving" and "Process Facility Shipping." Both of these functions were added to the flow diagrams every occurrence that waste entered or exited the macro level processing facility in Alternative 1.

These functional flow diagrams for Alternative 1 are the basis for the model results presented in Sections A.2.3 and A.2.4.

Figure A.2-1. Alternative 1 Functional Flow Diagram for High Level Waste Canisters.



Remote-Handled Transuranic Waste

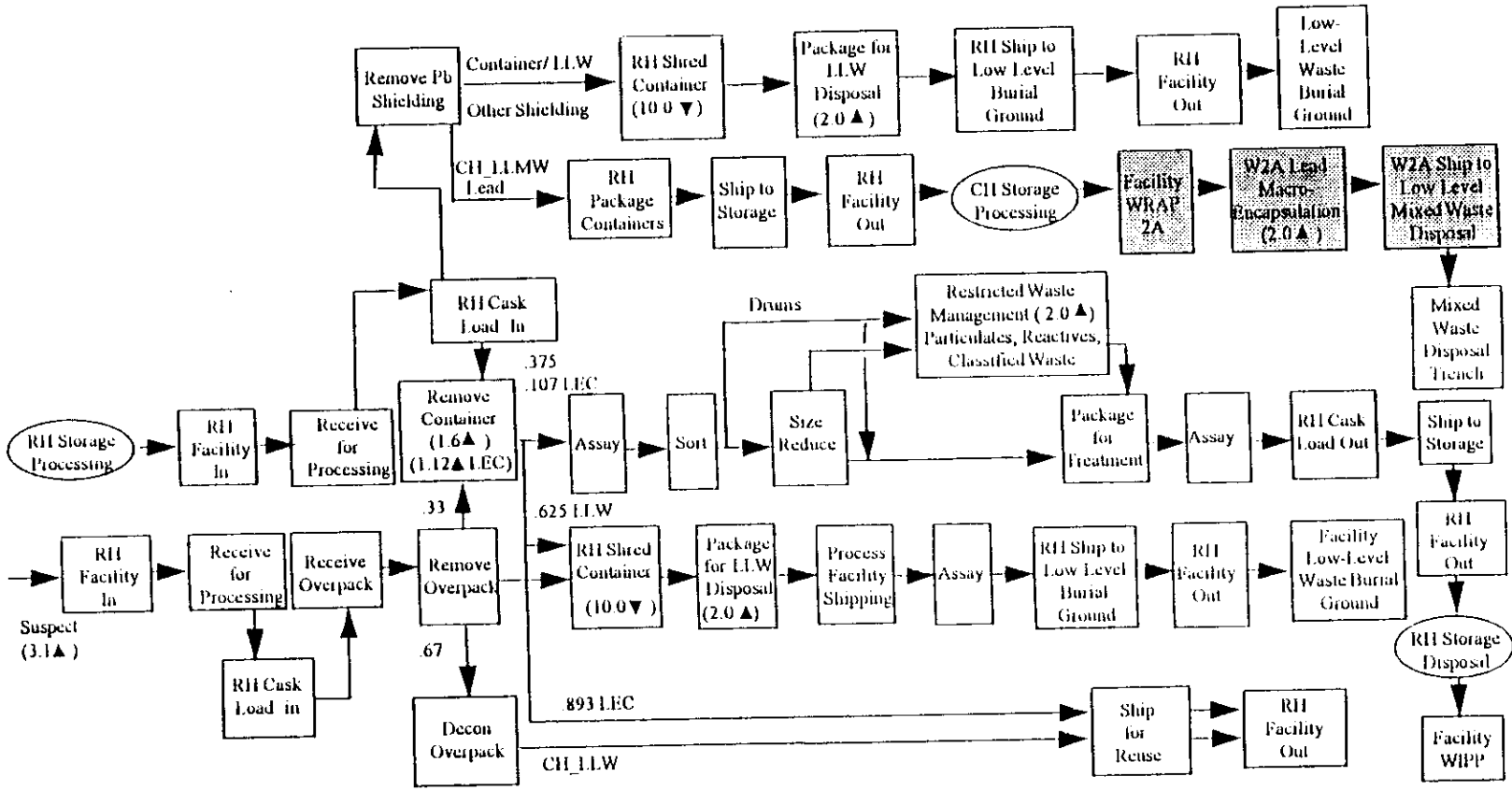


Figure A.2-2. Alternative 1 Functional Flow Diagram for Remote-Handled Transuranic Waste.

Contact-Handled Transuranic Waste In Large Containers & Special Treatment Stream

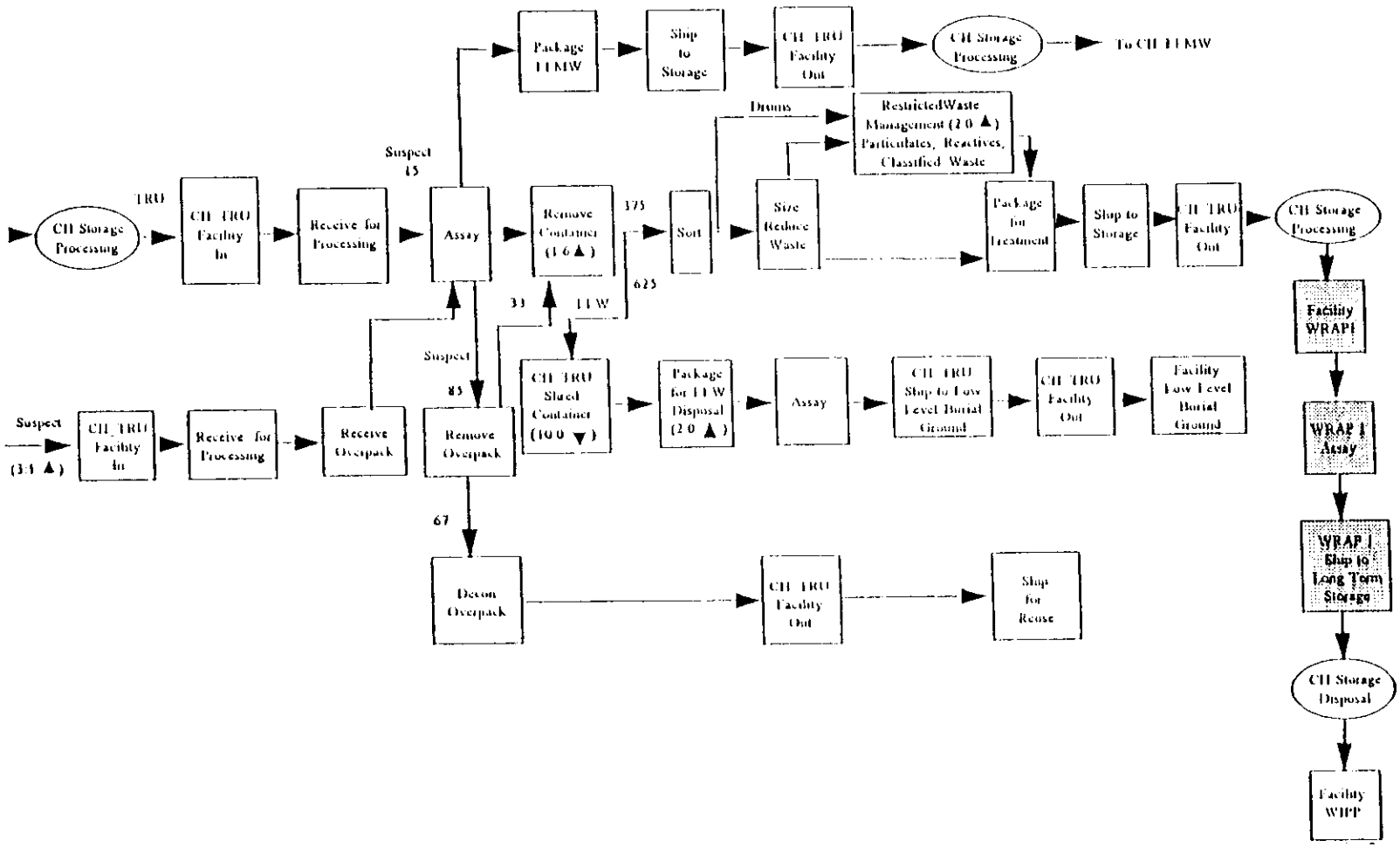


Figure A.2-3. Alternative 1 Functional Flow Diagram for Contact-Handled Transuranic Waste in Large Containers and Requiring Special Treatment

Figure A.2-4. Alternative 1 Functional Flow Diagram for Contaminated Soils and Buried Pre-1970 Waste.

CH-TRU Soils & Pre 1970 Buried Waste

Not Modeled

Figure A.2-5. Alternative 1 Functional Flow Diagram for Remote-Handled Low Level Mixed Waste.

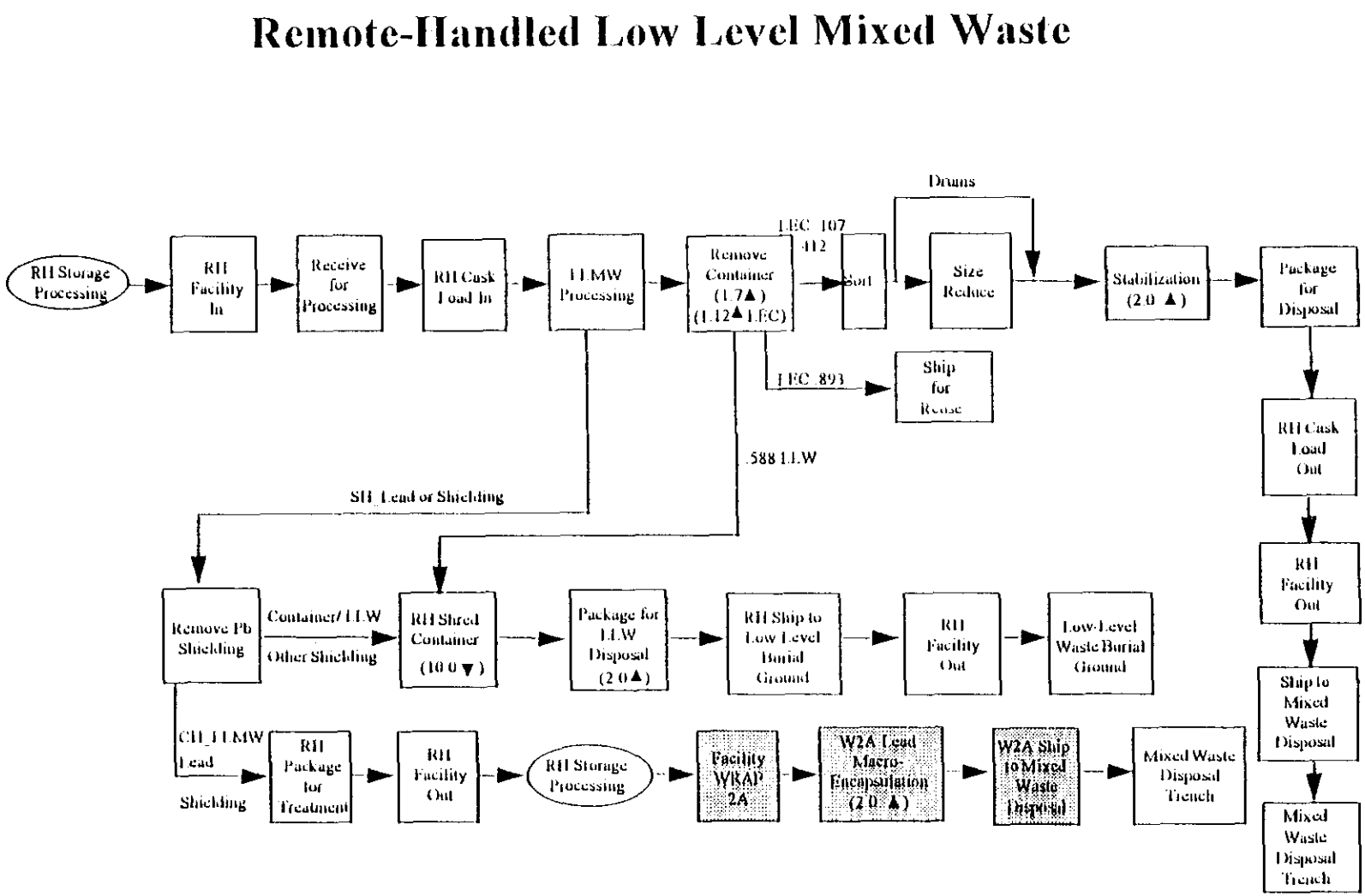


Figure A.2-6. Alternative 1 Functional Flow Diagram for Contact-Handled Low Level Mixed Waste.

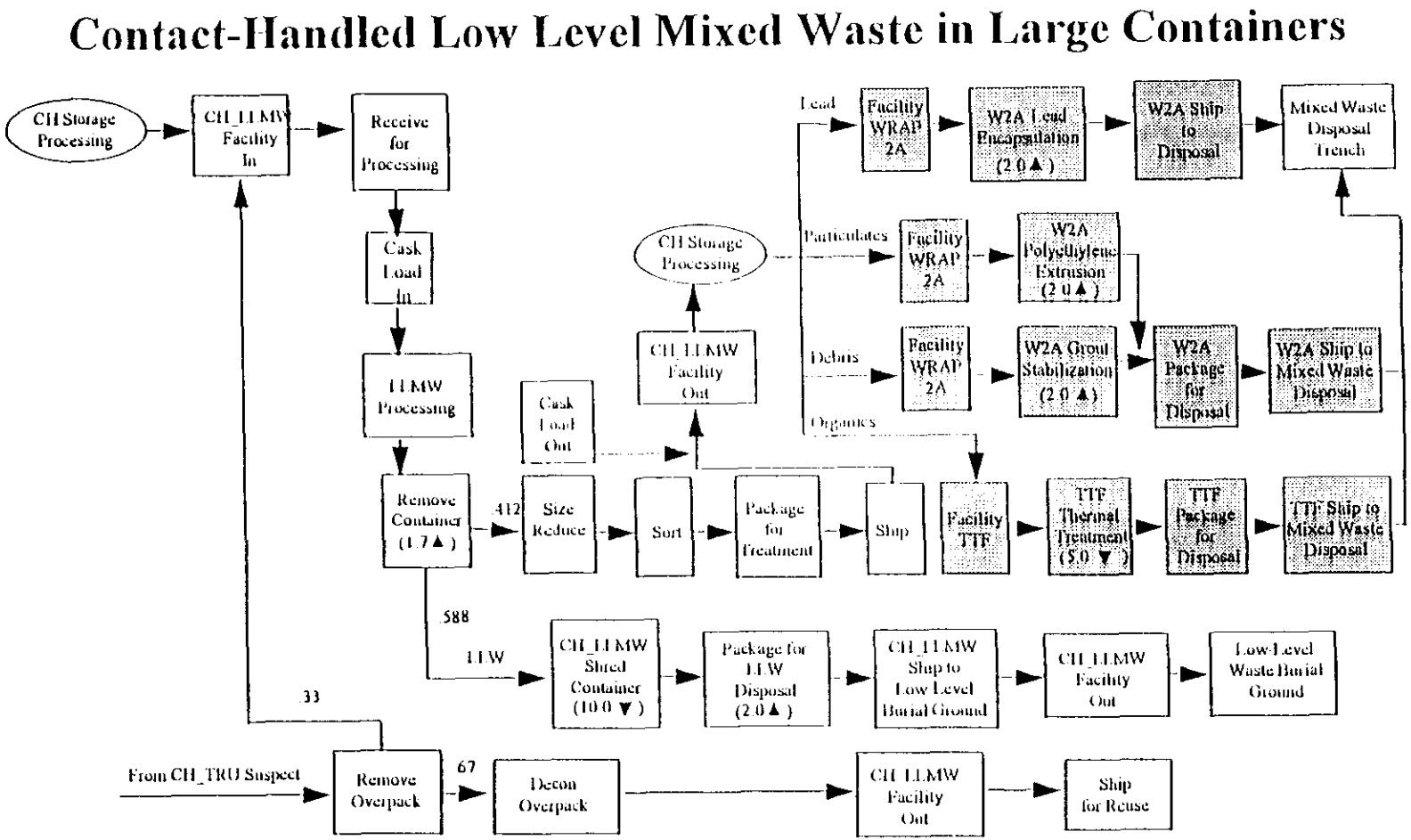


Figure A.2-7. Alternative 1 Functional Flow Diagram for Remote-Handled Greater Than Category III Waste.

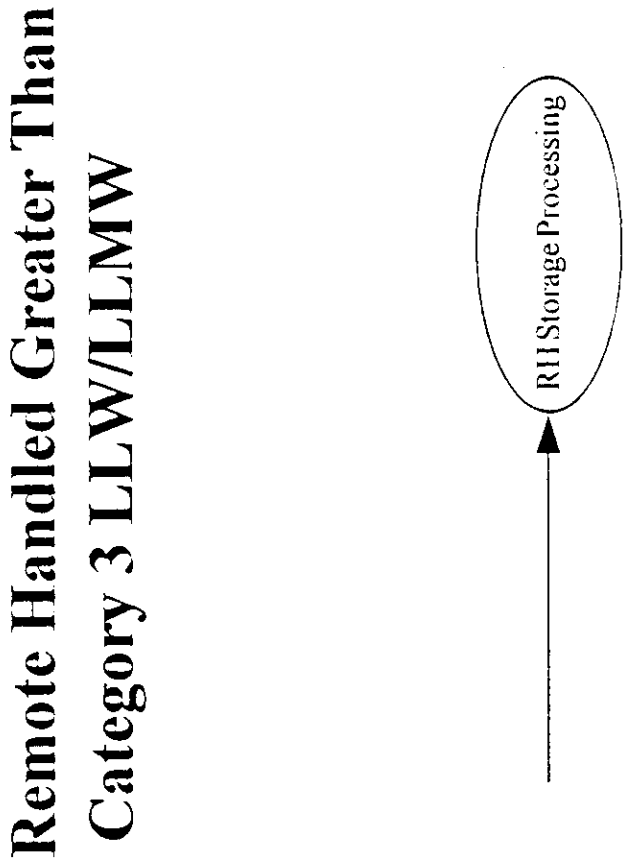


Figure A.2-8. Alternative 1 Functional Flow Diagram for Contact-Handled Greater Than Category III Waste.

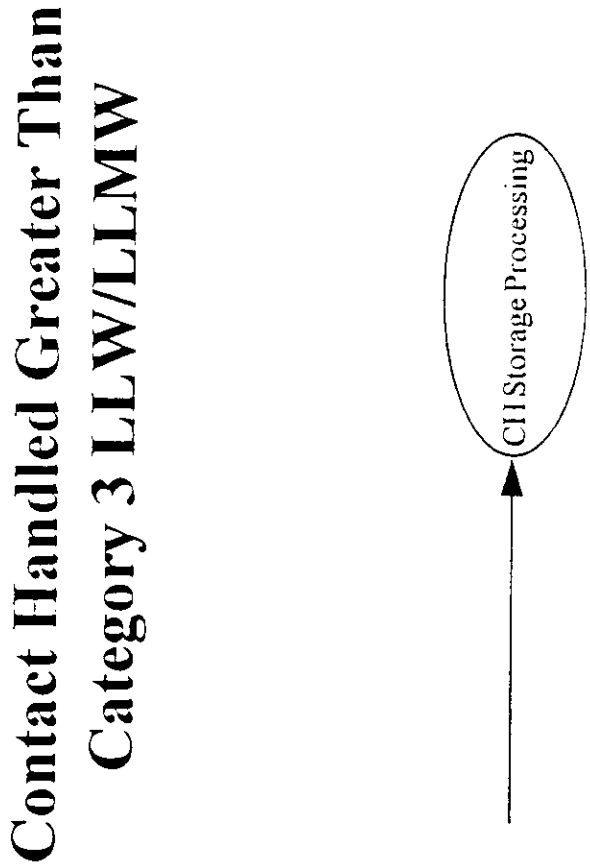


Figure A.2-9. Alternative 1 Functional Flow Diagram for Contaminated Metallic Sodium.

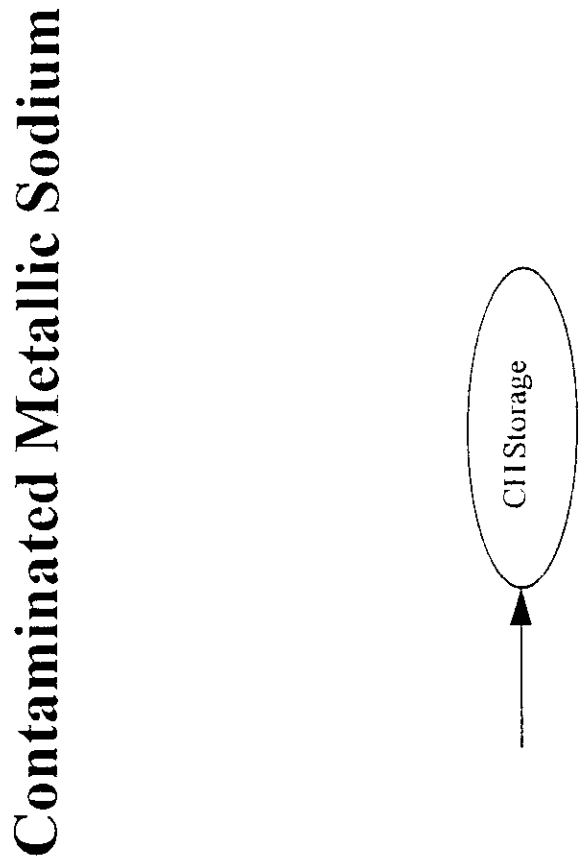


Figure A.2-10. Alternative 1 Functional Flow Diagram for Unirradiated Uranium.

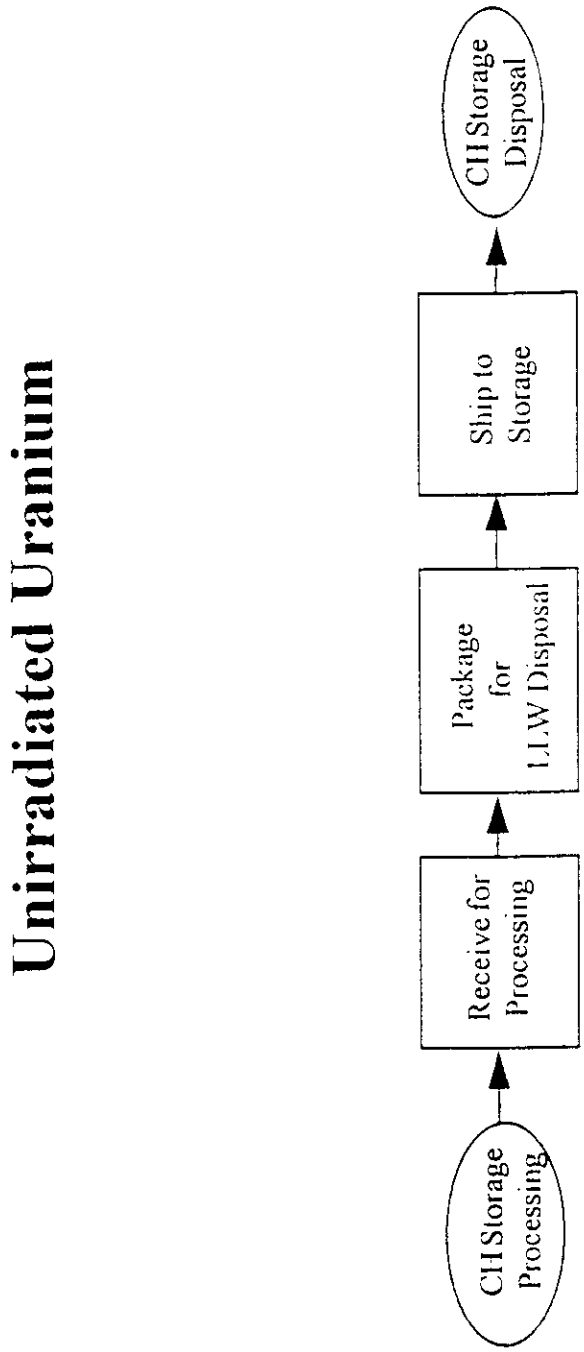


Figure A.2-11. Alternative 1 Functional Flow Diagram for Miscellaneous Remote-Handled Sources.

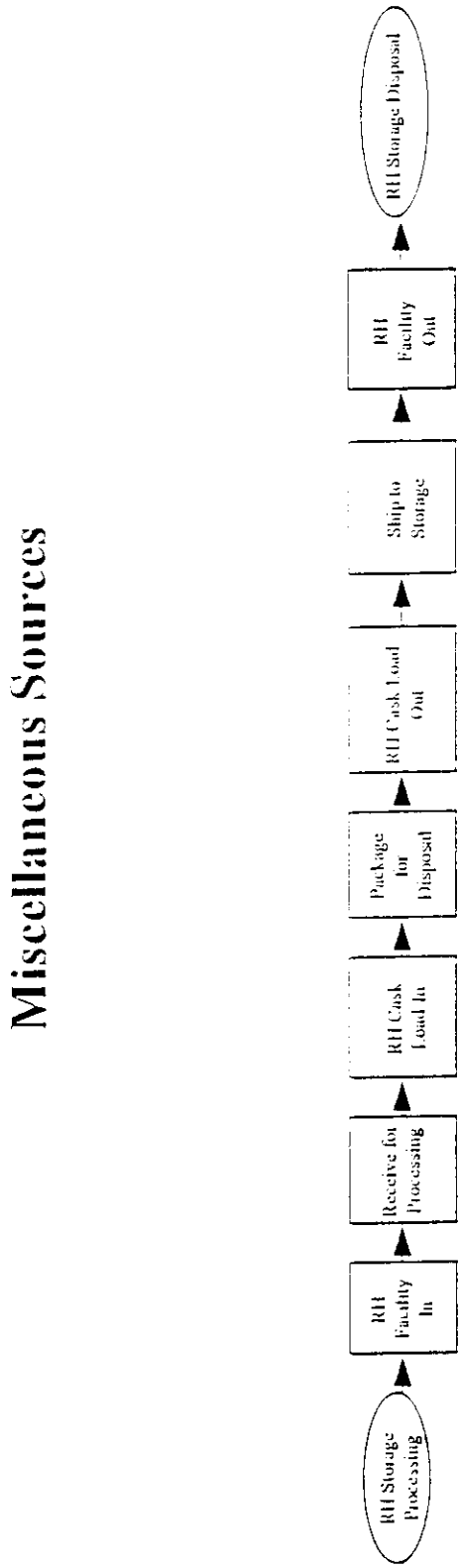
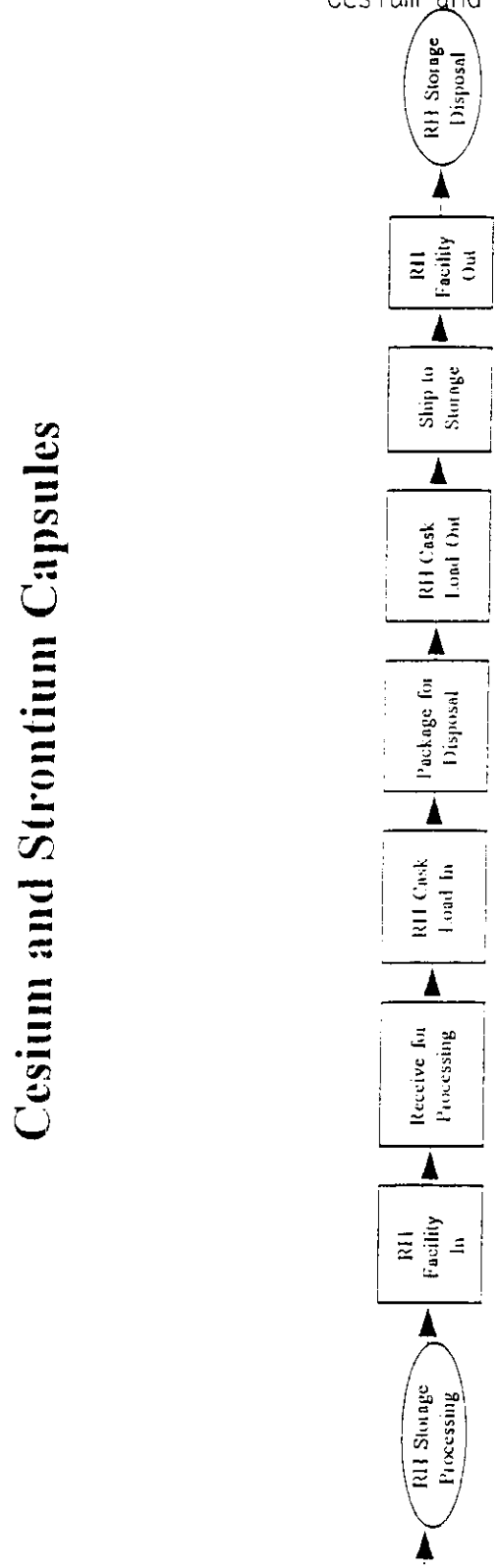


Figure A.2-12. Alternative 1 Functional Flow Diagram for Cesium and Strontium Capsules.



A.2.3 Model Throughput Results for Alternative 1

Table A.2-1 shows the annual throughput results in cubic meters for each function shown in the functional flow diagrams for Alternative 1.

A.2.4 Model Storage Results for Alternative 1

Table A.2-2 shows the annual storage results in cubic meters for each storage facility.

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CANISTERS	ENTERING.THE.SYSTEM											
CH_LLMW	DECON.OVERPACK											
CH_LLMW	ENTERING.THE.SYSTEM	725.27	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90
CH_LLMW	FACILITY.1.RECEIVING											
CH_LLMW	FACILITY.1.SHIPPING											
CH_LLMW	FACILITY.LLMW.DISPOSAL											
CH_LLMW	FACILITY.TTF											
CH_LLMW	FACILITY.WRAP.2A											
CH_LLMW	LLMW.PROCESSING											
CH_LLMW	PACKAGE.FOR.TREATMENT											
CH_LLMW	RECEIVE.FOR.PROCESSING											
CH_LLMW	REMOVE.CONTAINER											
CH_LLMW	REMOVE.OVERPACK											
CH_LLMW	RH.CASK.LOAD.IN											
CH_LLMW	RH.CASK.LOAD.OUT											
CH_LLMW	SHIP.FOR.REUSE											
CH_LLMW	SHIP.TO.STORAGE											
CH_LLMW	SIZE.REDUCE											
CH_LLMW	SORT											
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL											
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL											
CH_LLMW	TTF.THERMAL.TREATMENT											
CH_LLMW	W2A.GROUT.STABILIZATION											
CH_LLMW	W2A.LEAD.ENCAPSULATION											
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL											
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION											
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL											
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	50.20	2.10	2.30	32.90	32.90	94.08	48.19	45.90	137.68	168.28	179.09
CH_LLW	ASSAY											
CH_LLW	FACILITY.1.SHIPPING											
CH_LLW	FACILITY.LLW.BURIAL											
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL											
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND											
CH_LLW	SHRED.CONTAINER											
CH_LLW_GTCIII	ENTERING.THE.SYSTEM								283.30	849.90	1416.40	2549.60
CH_TRU	ASSAY											
CH_TRU	ENTERING.THE.SYSTEM	178.94	138.76	110.81	12.68	12.57	37.04	215.65	6.73	43.73	55.97	38.17
CH_TRU	FACILITY.1.RECEIVING											
CH_TRU	FACILITY.1.SHIPPING											
CH_TRU	FACILITY.WIPP											
CH_TRU	FACILITY.WRAP.1											
CH_TRU	PACKAGE.FOR.TREATMENT											

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CANISTERS	ENTERING.THE.SYSTEM						451.00	451.00	451.00	451.00	451.00	451.00
CH_LLMW	DECON.OVERPACK		185.99	220.73	233.47	250.73	244.18	242.51	201.27	188.24	147.54	40.70
CH_LLMW	ENTERING.THE.SYSTEM	21.90	47.48	21.90	21.90	21.90	47.51	21.90	21.90	21.90	47.52	21.90
CH_LLMW	FACILITY.1.RECEIVING		170.35	212.00	213.32	215.73	215.77	185.54	160.92	97.61	113.51	68.09
CH_LLMW	FACILITY.1.SHIPPING		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	FACILITY.LLMW.DISPOSAL		212.32	240.72	255.97	246.56	261.73	242.31	265.50	252.79	202.99	98.49
CH_LLMW	FACILITY.TTF		0.45				0.45				0.45	
CH_LLMW	FACILITY.WRAP.2A		116.62	120.36	119.04	126.55	127.55	130.10	123.80	126.39	101.45	58.19
CH_LLMW	LLMW.PROCESSING		170.35	212.00	213.32	215.73	215.77	185.54	160.92	97.61	113.51	68.09
CH_LLMW	PACKAGE.FOR.TREATMENT		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	RECEIVE.FOR.PROCESSING		170.35	212.00	213.32	215.73	215.77	185.54	160.92	97.61	113.51	68.09
CH_LLMW	REMOVE.CONTAINER		170.35	212.00	213.32	215.73	215.77	185.54	160.92	97.61	113.51	68.09
CH_LLMW	REMOVE.OVERPACK		277.60	329.45	348.46	374.22	364.45	361.96	300.40	280.96	220.21	60.75
CH_LLMW	RH.CASK.LOAD.IN		170.35	212.00	213.32	215.73	215.77	185.54	160.92	97.61	113.51	68.09
CH_LLMW	RH.CASK.LOAD.OUT		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	SHIP.FOR.REUSE		185.99	220.73	233.47	250.73	244.18	242.51	201.27	188.24	147.54	40.70
CH_LLMW	SHIP.TO.STORAGE		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	SIZE.REDUCE		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	SORT		119.32	148.49	149.41	151.10	151.13	129.95	112.71	68.37	79.50	47.69
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL		0.09				0.09				0.09	
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL		0.09				0.09				0.09	
CH_LLMW	TTF.THERMAL.TREATMENT		0.45				0.45				0.45	
CH_LLMW	W2A.GROUT.STABILIZATION		93.71	88.04	88.88	74.91	51.69	46.86	57.36	42.05	42.89	25.84
CH_LLMW	W2A.LEAD.ENCAPSULATION		1.48									
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL		209.27	240.72	255.97	246.56	261.64	242.31	265.50	252.79	202.90	98.49
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION		10.92	32.32	39.10	48.36	79.13	74.30	75.39	84.35	58.56	23.40
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL		212.23	240.72	255.97	246.56	261.64	242.31	265.50	252.79	202.90	98.49
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	148.49	205.09	205.09	220.39	220.39	135.49	107.09	77.69	251.47	248.67	248.67
CH_LLW	ASSAY		853.77	818.23	706.85	626.45	590.23	453.64	412.28	703.09	628.07	592.27
CH_LLW	FACILITY.1.SHIPPING		1011.51	1033.78	921.42	832.03	743.73	589.85	514.03	772.09	717.59	659.26
CH_LLW	FACILITY.LLW.BURIAL		1011.51	1033.78	921.42	832.03	743.73	589.85	514.03	772.09	717.59	659.26
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL		505.76	516.89	460.71	416.01	371.87	294.93	257.02	386.05	358.80	329.63
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND		1011.51	1033.78	921.42	832.03	743.73	589.85	514.03	772.09	717.59	659.26
CH_LLW	SHRED.CONTAINER		5057.56	5168.92	4607.12	4160.14	3718.67	2949.26	2570.17	3860.45	3587.98	3296.32
CH_LLW_GTCIII	ENTERING.THE.SYSTEM	3399.40	5382.40	7365.40	7082.20	6515.60	2266.30	1416.40	708.20	946.61	238.41	238.41
CH_TRU	ASSAY		173.28	123.70	123.94	177.38	91.08	156.98	91.39	826.29	708.01	870.08
CH_TRU	ENTERING.THE.SYSTEM	36.14	36.14	36.14	42.26	42.26	33.76	33.76	27.64	976.29	973.46	985.41
CH_TRU	FACILITY.1.RECEIVING		173.28	123.70	123.94	177.38	91.08	156.98	91.39	826.29	708.01	870.08
CH_TRU	FACILITY.1.SHIPPING		519.33	527.03	564.14	619.45	521.14	614.42	461.84	886.11	715.80	680.65
CH_TRU	FACILITY.WIPP		519.33	519.45	571.72	619.45	505.99	622.00	469.41	886.11	715.80	652.34
CH_TRU	FACILITY.WRAP.1		519.33	527.03	564.14	619.45	521.14	614.42	461.84	886.11	715.80	659.91
CH_TRU	PACKAGE.FOR.TREATMENT		519.33	527.03	564.14	619.45	521.14	614.42	461.84	886.11	715.80	680.65

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00
CH_LLMW	DECON.OVERPACK	15.56	18.09	49.75	54.27	81.40	55.93	72.36	46.06			
CH_LLMW	ENTERING.THE.SYSTEM	21.90	21.90	118.48	92.90	21.90	21.90	47.51	21.90			
CH_LLMW	FACILITY.1.RECEIVING	45.15	44.17	205.81	236.35	145.67	166.18	206.78	84.31			
CH_LLMW	FACILITY.1.SHIPPING	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	FACILITY.LLMW.DISPOSAL	73.53	78.85	238.39	251.30	254.61	218.82	249.14	256.32			
CH_LLMW	FACILITY.TTF			0.45				0.45				
CH_LLMW	FACILITY.WRAP.2A	27.82	39.43	128.10	116.70	127.31	109.41	127.80	123.33			
CH_LLMW	LLMW.PROCESSING	45.15	44.17	205.81	236.35	145.67	166.18	206.78	84.31			
CH_LLMW	PACKAGE.FOR.TREATMENT	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	RECEIVE.FOR.PROCESSING	45.15	44.17	205.81	236.35	145.67	166.18	206.78	84.31			
CH_LLMW	REMOVE.CONTAINER	45.15	44.17	205.81	236.35	145.67	166.18	206.78	84.31			
CH_LLMW	REMOVE.OVERPACK	23.22	27.00	74.25	81.00	121.50	83.48	108.00	68.74			
CH_LLMW	RH.CASK.LOAD.IN	45.15	44.17	205.81	236.35	145.67	166.18	206.78	84.31			
CH_LLMW	RH.CASK.LOAD.OUT	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	SHIP.FOR.REUSE	15.56	18.09	49.75	54.27	81.40	55.93	72.36	46.06			
CH_LLMW	SHIP.TO.STORAGE	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	SIZE.REDUCE	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	SORT	31.63	30.94	144.15	165.54	102.03	116.39	144.83	59.05			
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.09				0.09				
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.09				0.09				
CH_LLMW	TTF.THERMAL.TREATMENT			0.45				0.45				
CH_LLMW	W2A.GROUT.STABILIZATION	25.84	15.34	103.10	80.41	72.70	63.88	95.42	67.03			
CH_LLMW	W2A.LEAD.ENCAPSULATION											
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL	73.53	78.85	238.31	251.30	254.61	218.82	249.05	256.32			
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION	10.92	24.09	16.05	45.24	54.60	45.53	29.10	61.13			
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL	73.53	78.85	238.31	251.30	254.61	218.82	249.05	256.32			
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	233.37	233.37	218.07	218.07	202.78	202.78	202.78	2.30			
CH_LLW	ASSAY	640.72	575.47	922.87	889.37	955.43	900.13	869.14	306.75			
CH_LLW	FACILITY.1.SHIPPING	713.73	648.64	1114.27	1017.42	1099.44	1024.47	1014.46	378.81			
CH_LLW	FACILITY.LLW.BURIAL	713.73	648.64	1114.27	1017.42	1099.44	1024.47	1014.46	378.81			
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL	356.86	324.32	557.13	508.71	549.72	512.24	507.23	189.41			
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND	713.73	648.64	1114.27	1017.42	1099.44	1024.47	1014.46	378.81			
CH_LLW	SHRED.CONTAINER	3568.65	3243.21	5571.34	5087.09	5497.20	5122.35	5072.31	1894.06			
CH_LLW_GTCIII	ENTERING.THE.SYSTEM	238.41	238.41	238.41	238.41	238.41	238.41	238.41				
CH_TRU	ASSAY	760.43	831.69	1101.35	1217.94	1111.41	1208.52	1117.06	206.93			
CH_TRU	ENTERING.THE.SYSTEM	979.29	981.69	973.17	973.18	967.06	967.06	967.06	14.68			
CH_TRU	FACILITY.1.RECEIVING	760.43	831.69	1101.35	1217.94	1111.41	1208.52	1117.06	206.93			
CH_TRU	FACILITY.1.SHIPPING	548.18	600.50	857.26	908.60	874.59	873.91	882.26	219.23			
CH_TRU	FACILITY.WIPP	576.49	591.50	772.97	749.45	739.15	710.22	771.14	881.92			
CH_TRU	FACILITY.WRAP.1	568.92	591.50	831.69	812.45	787.44	713.07	826.56	653.63			
CH_TRU	PACKAGE.FOR.TREATMENT	548.18	600.50	857.26	908.60	874.59	873.91	882.26	219.23			

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2027	2028	Total
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	8569.00
CH_LLMW	DECON.OVERPACK			2348.80
CH_LLMW	ENTERING.THE.SYSTEM			1630.39
CH_LLMW	FACILITY.1.RECEIVING			2787.27
CH_LLMW	FACILITY.1.SHIPPING			1952.20
CH_LLMW	FACILITY.LLMW.DISPOSAL			3900.37
CH_LLMW	FACILITY.TTF			2.24
CH_LLMW	FACILITY.WRAP.2A			1949.96
CH_LLMW	LLMW.PROCESSING			2787.27
CH_LLMW	PACKAGE.FOR.TREATMENT			1952.20
CH_LLMW	RECEIVE.FOR.PROCESSING			2787.27
CH_LLMW	REMOVE.CONTAINER			2787.27
CH_LLMW	REMOVE.OVERPACK			3505.67
CH_LLMW	RH.CASK.LOAD.IN			2787.27
CH_LLMW	RH.CASK.LOAD.OUT			1952.20
CH_LLMW	SHIP.FOR.REUSE			2348.80
CH_LLMW	SHIP.TO.STORAGE			1952.20
CH_LLMW	SIZE.REDUCE			1952.20
CH_LLMW	SORT			1952.20
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.45
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.45
CH_LLMW	TTF.THERMAL.TREATMENT			2.24
CH_LLMW	W2A.GROUT.STABILIZATION			1135.97
CH_LLMW	W2A.LEAD.ENCAPSULATION			1.48
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL			3896.96
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION			812.51
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL			3899.92
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM			4375.65
CH_LLW	ASSAY			12444.75
CH_LLW	FACILITY.1.SHIPPING			14806.56
CH_LLW	FACILITY.LLW.BURIAL			14806.56
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL			7403.28
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND			14806.56
CH_LLW	SHRED.CONTAINER			74032.80
CH_LLW_GTCIII	ENTERING.THE.SYSTEM			42327.43
CH_TRU	ASSAY			10897.47
CH_TRU	ENTERING.THE.SYSTEM			10897.46
CH_TRU	FACILITY.1.RECEIVING			10897.47
CH_TRU	FACILITY.1.SHIPPING			11874.43
CH_TRU	FACILITY.WIPP			11874.43
CH_TRU	FACILITY.WRAP.1			11874.43
CH_TRU	PACKAGE.FOR.TREATMENT			11874.43

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CH_TRU	RECEIVE.FOR.PROCESSING											
CH_TRU	REMOVE.CONTAINER											
CH_TRU	RESTRICTED.WASTE.MANAGEMENT											
CH_TRU	SHIP.TO.STORAGE											
CH_TRU	SIZE.REDUCE											
CH_TRU	SORT											
CH_TRU	W1.ASSAY											
CH_TRU	W1.SHIP.TO.STORAGE											
CH_TRU_SUSPECT	ASSAY											
CH_TRU_SUSPECT	DECON.OVERPACK											
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM							519.33	519.36	519.36	519.36	519.36
CH_TRU_SUSPECT	FACILITY.1.RECEIVING											
CH_TRU_SUSPECT	FACILITY.1.SHIPPING											
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING											
CH_TRU_SUSPECT	RECEIVE.OVERPACK											
CH_TRU_SUSPECT	REMOVE.OVERPACK											
CH_TRU_SUSPECT	SHIP.FOR.REUSE											
CH_TRUM	ASSAY											
CH_TRUM	ENTERING.THE.SYSTEM	0.72	0.40	0.61	0.20	0.15	0.15	4.35	0.31	0.31	0.31	0.95
CH_TRUM	FACILITY.1.RECEIVING											
CH_TRUM	FACILITY.1.SHIPPING											
CH_TRUM	FACILITY.WIPP											
CH_TRUM	FACILITY.WRAP.1											
CH_TRUM	PACKAGE.FOR.TREATMENT											
CH_TRUM	RECEIVE.FOR.PROCESSING											
CH_TRUM	REMOVE.CONTAINER											
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT											
CH_TRUM	SHIP.TO.STORAGE											
CH_TRUM	SIZE.REDUCE											
CH_TRUM	SORT											
CH_TRUM	W1.ASSAY											
CH_TRUM	W1.SHIP.TO.STORAGE											
CS_CAPSULES	ENTERING.THE.SYSTEM	2.38										
CS_CAPSULES	FACILITY.1.RECEIVING											
CS_CAPSULES	FACILITY.1.SHIPPING											
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM	15.00										
MISC_SOURCES	FACILITY.1.RECEIVING											

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CH_TRU	RECEIVE.FOR.PROCESSING		173.28	123.70	123.94	177.38	91.08	156.98	91.39	826.29	708.01	870.08
CH_TRU	REMOVE.CONTAINER		692.39	739.78	775.57	877.17	772.60	833.85	653.14	1351.69	1119.81	983.68
CH_TRU	RESTRICTED.WASTE.MANAGEMENT		103.90	83.16	98.80	93.15	57.58	114.11	69.95	75.10	43.92	90.44
CH_TRU	SHIP.TO.STORAGE		519.33	527.03	564.14	619.45	521.14	614.42	461.84	886.11	715.80	680.65
CH_TRU	SIZE.REDUCE		330.07	360.71	366.54	442.15	405.98	395.20	321.94	735.91	627.96	499.77
CH_TRU	SORT		415.43	443.87	465.34	526.30	463.56	500.31	391.89	811.01	671.88	590.21
CH_TRU	W1.ASSAY		519.33	519.45	571.72	619.45	505.99	622.00	469.41	886.11	715.80	652.34
CH_TRU	W1.SHIP.TO.STORAGE		519.33	519.45	571.72	619.45	505.99	622.00	469.41	886.11	715.80	652.34
CH_TRU_SUSPECT	ASSAY		1850.67	2196.36	2323.08	2494.80	2429.64	2413.08	2002.68	1873.08	1468.08	405.00
CH_TRU_SUSPECT	DECON.OVERPACK		1053.96	1250.83	1322.99	1420.79	1383.68	1374.25	1140.53	1066.72	836.07	230.65
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	
CH_TRU_SUSPECT	FACILITY.1.RECEIVING		1850.67	2196.36	2323.08	2539.80	2384.64	2458.08	1957.68	1873.08	1468.08	405.00
CH_TRU_SUSPECT	FACILITY.1.SHIPPING		1053.96	1250.83	1322.99	1420.79	1383.68	1374.25	1140.53	1066.72	836.07	230.65
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		1850.67	2196.36	2323.08	2494.80	2429.64	2413.08	2002.68	1873.08	1468.08	405.00
CH_TRU_SUSPECT	RECEIVE.OVERPACK		1850.67	2196.36	2323.08	2494.80	2429.64	2413.08	2002.68	1873.08	1468.08	405.00
CH_TRU_SUSPECT	REMOVE.OVERPACK		1573.07	1866.91	1974.62	2120.58	2065.19	2051.12	1702.28	1592.12	1247.87	344.25
CH_TRU_SUSPECT	SHIP.FOR.REUSE		1053.96	1250.83	1322.99	1420.79	1383.68	1374.25	1140.53	1066.72	836.07	230.65
CH_TRUM	ASSAY		4.35	9.83	2.37	8.60	12.17	2.98	2.53	1037.22	962.61	1037.30
CH_TRUM	ENTERING.THE.SYSTEM	2.22	8.60	8.60	8.60	8.60	2.22	2.22	2.22	1279.42	1277.30	1277.30
CH_TRUM	FACILITY.1.RECEIVING		4.35	9.83	2.37	8.60	12.17	2.98	2.53	1037.22	962.61	1037.30
CH_TRUM	FACILITY.1.SHIPPING		5.22	11.79	2.85	10.32	14.60	3.58	3.04	623.67	577.81	622.44
CH_TRUM	FACILITY.WIPP		5.22	11.79	2.85	10.32	14.60	3.58	3.04	614.67	586.81	622.44
CH_TRUM	FACILITY.WRAP.1		5.22	11.79	2.85	10.32	14.60	3.58	3.04	623.67	577.81	622.44
CH_TRUM	PACKAGE.FOR.TREATMENT		5.22	11.79	2.85	10.32	14.60	3.58	3.04	623.67	577.81	622.44
CH_TRUM	RECEIVE.FOR.PROCESSING		4.35	9.83	2.37	8.60	12.17	2.98	2.53	1037.22	962.61	1037.30
CH_TRUM	REMOVE.CONTAINER		4.35	9.83	2.37	8.60	12.17	2.98	2.53	1037.22	962.61	1037.30
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT		2.61	5.90	1.42	5.16	7.30	1.79	1.52	1.33	0.25	0.06
CH_TRUM	SHIP.TO.STORAGE		5.22	11.79	2.85	10.32	14.60	3.58	3.04	623.67	577.81	622.44
CH_TRUM	SIZE.REDUCE									621.00	577.32	622.32
CH_TRUM	SORT		2.61	5.90	1.42	5.16	7.30	1.79	1.52	622.33	577.57	622.38
CH_TRUM	W1.ASSAY		5.22	11.79	2.85	10.32	14.60	3.58	3.04	614.67	586.81	622.44
CH_TRUM	W1.SHIP.TO.STORAGE		5.22	11.79	2.85	10.32	14.60	3.58	3.04	614.67	586.81	622.44
CS_CAPSULES	ENTERING.THE.SYSTEM											
CS_CAPSULES	FACILITY.1.RECEIVING											
CS_CAPSULES	FACILITY.1.SHIPPING											
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM											
MISC_SOURCES	FACILITY.1.RECEIVING					15.00						

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CH_TRU	RECEIVE.FOR.PROCESSING	760.43	831.69	1101.35	1217.94	1111.41	1208.52	1117.06	206.93			
CH_TRU	REMOVE.CONTAINER	803.85	882.18	1240.20	1369.41	1338.62	1364.64	1319.02	335.48			
CH_TRU	RESTRICTED.WASTE.MANAGEMENT	65.87	71.19	113.14	86.95	71.42	55.12	90.85	17.94			
CH_TRU	SHIP.TO.STORAGE	548.18	600.50	857.26	908.60	874.59	873.91	882.26	219.23			
CH_TRU	SIZE.REDUCE	416.44	458.12	639.98	734.70	731.75	770.15	700.56	183.34			
CH_TRU	SORT	482.31	529.31	744.12	821.65	803.17	818.78	791.41	201.29			
CH_TRU	W1.ASSAY	576.49	591.50	824.11	811.02	796.44	713.07	818.99	661.20			
CH_TRU	W1.SHIP.TO.STORAGE	576.49	591.50	824.11	811.02	796.44	713.07	818.99	661.20			
CH_TRU_SUSPECT	ASSAY	154.80	180.00	495.00	540.00	810.00	556.56	720.00	458.28			
CH_TRU_SUSPECT	DECON.OVERPACK	88.16	102.51	281.90	307.53	461.30	316.96	410.04	260.99			
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM											
CH_TRU_SUSPECT	FACILITY.1.RECEIVING	199.80	135.00	540.00	495.00	810.00	556.56	720.00	458.28			
CH_TRU_SUSPECT	FACILITY.1.SHIPPING	88.16	102.51	281.90	307.53	461.30	316.96	410.04	260.99			
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	154.80	180.00	495.00	540.00	810.00	556.56	720.00	458.28			
CH_TRU_SUSPECT	RECEIVE.OVERPACK	154.80	180.00	495.00	540.00	810.00	556.56	720.00	458.28			
CH_TRU_SUSPECT	REMOVE.OVERPACK	131.58	153.00	420.75	459.00	688.50	473.08	612.00	389.54			
CH_TRU_SUSPECT	SHIP.FOR.REUSE	88.16	102.51	281.90	307.53	461.30	316.96	410.04	260.99			
CH_TRUM	ASSAY	1097.30	992.30	1292.30	1382.30	1517.30	1720.90	1412.30	332.30			
CH_TRUM	ENTERING.THE.SYSTEM	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	0.10			
CH_TRUM	FACILITY.1.RECEIVING	1097.30	992.30	1292.30	1382.30	1517.30	1720.90	1412.30	332.30			
CH_TRUM	FACILITY.1.SHIPPING	658.44	595.44	775.44	829.44	910.44	1037.76	847.44	199.44			
CH_TRUM	FACILITY.WIPP	658.44	568.44	703.44	730.44	748.44	829.32	766.56	848.76			
CH_TRUM	FACILITY.WRAP.1	658.44	586.44	739.44	775.44	793.44	865.32	748.56	686.76			
CH_TRUM	PACKAGE.FOR.TREATMENT	658.44	595.44	775.44	829.44	910.44	1037.76	847.44	199.44			
CH_TRUM	RECEIVE.FOR.PROCESSING	1097.30	992.30	1292.30	1382.30	1517.30	1720.90	1412.30	332.30			
CH_TRUM	REMOVE.CONTAINER	1097.30	992.30	1292.30	1382.30	1517.30	1720.90	1412.30	332.30			
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT	0.06	0.06	0.06	0.06	0.06	5.22	0.06	0.06			
CH_TRUM	SHIP.TO.STORAGE	658.44	595.44	775.44	829.44	910.44	1037.76	847.44	199.44			
CH_TRUM	SIZE.REDUCE	658.32	595.32	775.32	829.32	910.32	1027.32	847.32	199.32			
CH_TRUM	SORT	658.38	595.38	775.38	829.38	910.38	1032.54	847.38	199.38			
CH_TRUM	W1.ASSAY	658.44	577.44	748.44	775.44	784.44	865.32	757.56	686.76			
CH_TRUM	W1.SHIP.TO.STORAGE	658.44	577.44	748.44	775.44	784.44	865.32	757.56	686.76			
CS_CAPSULES	ENTERING.THE.SYSTEM											
CS_CAPSULES	FACILITY.1.RECEIVING							2.38				
CS_CAPSULES	FACILITY.1.SHIPPING							2.38				
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL							2.38				
CS_CAPSULES	RECEIVE.FOR.PROCESSING							2.38				
CS_CAPSULES	RH.CASK.LOAD.IN							2.38				
CS_CAPSULES	RH.CASK.LOAD.OUT							2.38				
CS_CAPSULES	SHIP.TO.STORAGE							2.38				
MISC_SOURCES	ENTERING.THE.SYSTEM											
MISC_SOURCES	FACILITY.1.RECEIVING											

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2027	2028	Total
CH_TRU	RECEIVE.FOR.PROCESSING			10897.47
CH_TRU	REMOVE.CONTAINER			17453.07
CH_TRU	RESTRICTED.WASTE.MANAGEMENT			1402.59
CH_TRU	SHIP.TO.STORAGE			11874.43
CH_TRU	SIZE.REDUCE			9121.27
CH_TRU	SORT			10471.84
CH_TRU	W1.ASSAY			11874.43
CH_TRU	W1.SHIP.TO.STORAGE			11874.43
CH_TRU_SUSPECT	ASSAY			23371.11
CH_TRU_SUSPECT	DECON.OVERPACK			13309.85
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM			7790.37
CH_TRU_SUSPECT	FACILITY.1.RECEIVING			23371.11
CH_TRU_SUSPECT	FACILITY.1.SHIPPING			13309.85
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			23371.11
CH_TRU_SUSPECT	RECEIVE.OVERPACK			23371.11
CH_TRU_SUSPECT	REMOVE.OVERPACK			19865.44
CH_TRU_SUSPECT	SHIP.FOR.REUSE			13309.85
CH_TRUM	ASSAY			12826.97
CH_TRUM	ENTERING.THE.SYSTEM			12826.97
CH_TRUM	FACILITY.1.RECEIVING			12826.97
CH_TRUM	FACILITY.1.SHIPPING			7729.16
CH_TRUM	FACILITY.WIPP			7729.16
CH_TRUM	FACILITY.WRAP.1			7729.16
CH_TRUM	PACKAGE.FOR.TREATMENT			7729.16
CH_TRUM	RECEIVE.FOR.PROCESSING			12826.97
CH_TRUM	REMOVE.CONTAINER			12826.97
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT			32.98
CH_TRUM	SHIP.TO.STORAGE			7729.16
CH_TRUM	SIZE.REDUCE			7663.20
CH_TRUM	SORT			7696.18
CH_TRUM	W1.ASSAY			7729.16
CH_TRUM	W1.SHIP.TO.STORAGE			7729.16
CS_CAPSULES	ENTERING.THE.SYSTEM			2.38
CS_CAPSULES	FACILITY.1.RECEIVING			2.38
CS_CAPSULES	FACILITY.1.SHIPPING			2.38
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL			2.38
CS_CAPSULES	RECEIVE.FOR.PROCESSING			2.38
CS_CAPSULES	RH.CASK.LOAD.IN			2.38
CS_CAPSULES	RH.CASK.LOAD.OUT			2.38
CS_CAPSULES	SHIP.TO.STORAGE			2.38
MISC_SOURCES	ENTERING.THE.SYSTEM			15.00
MISC_SOURCES	FACILITY.1.RECEIVING			15.00

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MISC_SOURCES	FACILITY.1.SHIPPING											
MISC_SOURCES	PACKAGE.FOR.DISPOSAL											
MISC_SOURCES	RECEIVE.FOR.PROCESSING											
MISC_SOURCES	RH.CASK.LOAD.IN											
MISC_SOURCES	RH.CASK.LOAD.OUT											
MISC_SOURCES	SHIP.TO.STORAGE											
RH_LLMW	ENTERING.THE.SYSTEM	1419.55	1326.97	1314.47	1792.47	1466.42	1529.14	1553.87	1773.31	1976.87	2017.58	2796.99
RH_LLMW	FACILITY.1.RECEIVING											
RH_LLMW	FACILITY.1.SHIPPING											
RH_LLMW	FACILITY.LLMW.DISPOSAL											
RH_LLMW	LLMW.PROCESSING											
RH_LLMW	PACKAGE.FOR.DISPOSAL											
RH_LLMW	RECEIVE.FOR.PROCESSING											
RH_LLMW	REMOVE.CONTAINER											
RH_LLMW	RH.CASK.LOAD.IN											
RH_LLMW	RH.CASK.LOAD.OUT											
RH_LLMW	SHIP.FOR.REUSE											
RH_LLMW	SHIP.TO.LLMW.DISPOSAL											
RH_LLMW	SIZE.REDUCE											
RH_LLMW	SORT											
RH_LLMW	STABILIZATION											
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	14.20							28.30	28.30	28.30	85.00
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	24.30	0.30	0.30	0.30	0.30	0.30	0.30	283.60	850.20	1416.70	2549.90
RH_TRU	ASSAY											
RH_TRU	ENTERING.THE.SYSTEM	1084.19	103.40	38.50	1.70	26.90	24.80	24.80	1.70	1.70	1.70	1.70
RH_TRU	FACILITY.1.RECEIVING											
RH_TRU	FACILITY.1.SHIPPING											
RH_TRU	FACILITY.WIPP											
RH_TRU	PACKAGE.FOR.TREATMENT											
RH_TRU	RECEIVE.FOR.PROCESSING											
RH_TRU	REMOVE.CONTAINER											
RH_TRU	RESTRICTED.WASTE.MANAGEMENT											
RH_TRU	RH.CASK.LOAD.IN											
RH_TRU	RH.CASK.LOAD.OUT											
RH_TRU	SHIP.TO.STORAGE											
RH_TRU	SIZE.REDUCE											
RH_TRU	SORT											
RH_TRU_SUSPECT	DECON.OVERPACK											
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM							25.33	25.33	25.33	25.33	25.33
RH_TRU_SUSPECT	FACILITY.1.RECEIVING											
RH_TRU_SUSPECT	FACILITY.1.SHIPPING											
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING											

Table A.2-1

Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
MISC_SOURCES	FACILITY.1.SHIPPING					15.00						
MISC_SOURCES	PACKAGE.FOR.DISPOSAL					15.00						
MISC_SOURCES	RECEIVE.FOR.PROCESSING					15.00						
MISC_SOURCES	RH.CASK.LOAD.IN					15.00						
MISC_SOURCES	RH.CASK.LOAD.OUT					15.00						
MISC_SOURCES	SHIP.TO.STORAGE					15.00						
RH_LLMW	ENTERING.THE.SYSTEM	2630.96	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	5232.22	5707.17	6559.70	7167.19
RH_LLMW	FACILITY.1.RECEIVING		4485.66	4446.36	4817.11	4880.41	5171.56	5884.50	6179.81	5180.59	5780.91	6670.50
RH_LLMW	FACILITY.1.SHIPPING		1793.47	2071.45	2149.51	2116.83	1876.93	1989.70	1881.69	1532.70	1770.13	1909.80
RH_LLMW	FACILITY.LLMW.DISPOSAL		1793.47	2071.45	2149.51	2116.83	1876.93	1989.70	1881.69	1532.70	1770.13	1909.80
RH_LLMW	LLMW.PROCESSING		4485.66	4446.36	4802.11	4895.41	5156.56	5899.50	6164.81	5195.59	5765.91	6674.48
RH_LLMW	PACKAGE.FOR.DISPOSAL		1793.47	2071.45	2149.51	2116.83	1876.93	1989.70	1881.69	1532.70	1770.13	1909.80
RH_LLMW	RECEIVE.FOR.PROCESSING		4485.66	4446.36	4802.11	4895.41	5156.56	5899.50	6164.81	5195.59	5765.91	6674.48
RH_LLMW	REMOVE.CONTAINER		4485.66	4446.36	4802.11	4895.41	5156.56	5899.50	6164.81	5195.59	5765.91	6674.48
RH_LLMW	RH.CASK.LOAD.IN		4485.66	4446.36	4802.11	4895.41	5156.56	5899.50	6164.81	5195.59	5765.91	6674.48
RH_LLMW	RH.CASK.LOAD.OUT		1793.47	2071.45	2149.51	2116.83	1876.93	1989.70	1881.69	1532.70	1770.13	1909.80
RH_LLMW	SHIP.FOR.REUSE		3867.61	3580.75	3942.76	4083.49	4605.24	5404.55	5817.70	4948.84	5432.49	6408.47
RH_LLMW	SHIP.TO.LLMW.DISPOSAL		1793.47	2071.45	2149.51	2116.83	1876.93	1989.70	1881.69	1532.70	1770.13	1909.80
RH_LLMW	SIZE.REDUCE		706.34	731.85	837.71	749.87	792.94	871.82	857.59	745.11	844.31	936.95
RH_LLMW	SORT		896.73	1035.72	1074.76	1058.41	938.46	994.85	940.85	766.35	885.06	954.90
RH_LLMW	STABILIZATION		896.73	1035.72	1074.76	1058.41	938.46	994.85	940.85	766.35	885.06	954.90
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	85.00	141.60	141.60	141.60	141.60	56.70	28.30	14.20	64.46	61.66	61.66
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	3399.70	5382.70	7365.70	7082.50	6515.90	2266.60	1416.70	708.50	814.40	106.20	106.20
RH_TRU	ASSAY		327.20	246.62	348.58	237.39	211.95	239.31	123.60	512.11	513.47	601.53
RH_TRU	ENTERING.THE.SYSTEM	1.70	1.70	1.70	1.70	1.70	48.60	51.20	51.00	518.56	520.76	640.66
RH_TRU	FACILITY.1.RECEIVING		258.96	165.59	230.10	157.90	136.70	153.89	67.70	413.56	377.20	490.66
RH_TRU	FACILITY.1.SHIPPING		165.69	123.31	174.29	118.70	105.98	119.65	61.80	257.93	263.11	307.14
RH_TRU	FACILITY.WIPP		165.69	123.31	174.29	118.70	105.98	119.65	61.80	248.93	272.11	307.14
RH_TRU	PACKAGE.FOR.TREATMENT		165.69	123.31	174.29	118.70	105.98	119.65	61.80	257.93	263.11	307.14
RH_TRU	RECEIVE.FOR.PROCESSING		258.96	165.59	230.10	157.90	136.70	153.89	67.70	398.56	392.20	490.66
RH_TRU	REMOVE.CONTAINER		269.19	205.52	290.48	197.83	176.63	199.42	103.00	423.64	417.28	490.66
RH_TRU	RESTRICTED.WASTE.MANAGEMENT		4.18							3.74	12.74	12.74
RH_TRU	RH.CASK.LOAD.IN		258.96	165.59	230.10	157.90	136.70	153.89	67.70	398.56	392.20	490.66
RH_TRU	RH.CASK.LOAD.OUT		165.69	123.31	174.29	118.70	105.98	119.65	61.80	257.93	263.11	307.14
RH_TRU	SHIP.TO.STORAGE		165.69	123.31	174.29	118.70	105.98	119.65	61.80	257.93	263.11	307.14
RH_TRU	SIZE.REDUCE		121.18	80.33	117.00	90.00	63.00	68.46	39.45	212.19	198.47	256.15
RH_TRU	SORT		161.51	123.31	174.29	118.70	105.98	119.65	61.80	254.18	250.36	294.39
RH_TRU_SUSPECT	DECON.OVERPACK		20.76	81.06	122.59	81.06	81.06	92.44	71.68	50.91	50.91	
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	
RH_TRU_SUSPECT	FACILITY.1.RECEIVING		30.99	120.99	182.97	120.99	120.99	137.97	106.98	75.99	75.99	
RH_TRU_SUSPECT	FACILITY.1.SHIPPING		20.76	81.06	122.59	81.06	81.06	92.44	71.68	50.91	50.91	
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		30.99	120.99	182.97	120.99	120.99	137.97	106.98	75.99	75.99	

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
MISC_SOURCES	FACILITY.1.SHIPPING											
MISC_SOURCES	PACKAGE.FOR.DISPOSAL											
MISC_SOURCES	RECEIVE.FOR.PROCESSING											
MISC_SOURCES	RH.CASK.LOAD.IN											
MISC_SOURCES	RH.CASK.LOAD.OUT											
MISC_SOURCES	SHIP.TO.STORAGE											
RH_LLMW	ENTERING.THE.SYSTEM	7430.34	7574.30	3148.90	2735.63	2419.13	2688.92	3018.21	2827.36			
RH_LLMW	FACILITY.1.RECEIVING	6486.18	6907.64	5021.47	5074.27	4740.30	5038.38	5186.05	4808.09			
RH_LLMW	FACILITY.1.SHIPPING	1928.85	2025.72	2079.82	1685.45	1803.45	1733.22	1846.93	1476.62			
RH_LLMW	FACILITY.LLMW.DISPOSAL	1928.85	2025.72	2079.82	1685.45	1803.45	1733.22	1846.93	1476.62			
RH_LLMW	LLMW.PROCESSING	6497.21	6892.64	5036.47	5074.27	4740.30	5023.38	5186.05	4823.09			
RH_LLMW	PACKAGE.FOR.DISPOSAL	1928.85	2025.72	2079.82	1685.45	1803.45	1733.22	1846.93	1476.62			
RH_LLMW	RECEIVE.FOR.PROCESSING	6497.21	6892.64	5036.47	5074.27	4740.30	5023.38	5186.05	4823.09			
RH_LLMW	REMOVE.CONTAINER	6497.21	6892.64	5036.47	5074.27	4740.30	5023.38	5186.05	4823.09			
RH_LLMW	RH.CASK.LOAD.IN	6497.21	6892.64	5036.47	5074.27	4740.30	5023.38	5186.05	4823.09			
RH_LLMW	RH.CASK.LOAD.OUT	1928.85	2025.72	2079.82	1685.45	1803.45	1733.22	1846.93	1476.62			
RH_LLMW	SHIP.FOR.REUSE	6178.16	6571.86	4285.58	4670.88	4166.27	4568.33	4666.65	4547.69			
RH_LLMW	SHIP.TO.LLMW.DISPOSAL	1928.85	2025.72	2079.82	1685.45	1803.45	1733.22	1846.93	1476.62			
RH_LLMW	SIZE.REDUCE	926.09	1006.16	805.63	800.66	779.35	846.60	868.99	699.98			
RH_LLMW	SORT	964.42	1012.86	1039.91	842.73	901.72	866.61	923.47	738.31			
RH_LLMW	STABILIZATION	964.42	1012.86	1039.91	842.73	901.72	866.61	923.47	738.31			
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	61.66	61.66	61.66	61.66	61.66	61.66	61.66				
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	106.20	106.20	106.20	106.20	106.20	106.20	106.20	0.30			
RH_TRU	ASSAY	649.29	676.54	1070.92	1091.55	886.40	879.43	891.57	358.57			
RH_TRU	ENTERING.THE.SYSTEM	643.26	640.66	831.36	793.76	586.36	520.76	518.36	51.00			
RH_TRU	FACILITY.1.RECEIVING	508.26	553.16	871.59	914.01	705.54	722.24	732.36	276.46			
RH_TRU	FACILITY.1.SHIPPING	326.52	344.64	541.83	552.15	454.07	446.08	452.16	183.79			
RH_TRU	FACILITY.WIPP	326.52	344.64	509.64	507.15	436.07	439.87	467.76	269.59			
RH_TRU	PACKAGE.FOR.TREATMENT	326.52	344.64	541.83	552.15	454.07	446.08	452.16	183.79			
RH_TRU	RECEIVE.FOR.PROCESSING	508.26	553.16	871.59	899.01	720.54	722.24	732.36	276.46			
RH_TRU	REMOVE.CONTAINER	537.96	553.16	881.82	899.01	720.54	722.24	732.36	291.31			
RH_TRU	RESTRICTED.WASTE.MANAGEMENT	3.74	12.74	12.74	12.74	21.74	12.74	12.74	9.00			
RH_TRU	RH.CASK.LOAD.IN	508.26	553.16	871.59	899.01	720.54	722.24	732.36	276.46			
RH_TRU	RH.CASK.LOAD.OUT	326.52	344.64	541.83	552.15	454.07	446.08	452.16	183.79			
RH_TRU	SHIP.TO.STORAGE	326.52	344.64	541.83	552.15	454.07	446.08	452.16	183.79			
RH_TRU	SIZE.REDUCE	266.59	292.15	338.19	348.63	320.58	357.21	376.98	120.45			
RH_TRU	SORT	322.77	331.90	529.09	539.40	432.33	433.34	439.42	174.79			
RH_TRU_SUSPECT	DECON.OVERPACK	60.30		20.76					30.15			
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM											
RH_TRU_SUSPECT	FACILITY.1.RECEIVING	90.00		30.99					45.00			
RH_TRU_SUSPECT	FACILITY.1.SHIPPING	60.30		20.76					30.15			
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	90.00		30.99					45.00			

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2027	2028	Total
MISC_SOURCES	FACILITY.1.SHIPPING			15.00
MISC_SOURCES	PACKAGE.FOR.DISPOSAL			15.00
MISC_SOURCES	RECEIVE.FOR.PROCESSING			15.00
MISC_SOURCES	RH.CASK.LOAD.IN			15.00
MISC_SOURCES	RH.CASK.LOAD.OUT			15.00
MISC_SOURCES	SHIP.TO.STORAGE			15.00
RH_LLMW	ENTERING.THE.SYSTEM			96759.81
RH_LLMW	FACILITY.1.RECEIVING			96759.81
RH_LLMW	FACILITY.1.SHIPPING			33672.27
RH_LLMW	FACILITY.LLMW.DISPOSAL			33672.27
RH_LLMW	LLMW.PROCESSING			96759.81
RH_LLMW	PACKAGE.FOR.DISPOSAL			33672.27
RH_LLMW	RECEIVE.FOR.PROCESSING			96759.81
RH_LLMW	REMOVE.CONTAINER			96759.81
RH_LLMW	RH.CASK.LOAD.IN			96759.81
RH_LLMW	RH.CASK.LOAD.OUT			33672.27
RH_LLMW	SHIP.FOR.REUSE			87747.33
RH_LLMW	SHIP.TO.LLMW.DISPOSAL			33672.27
RH_LLMW	SIZE.REDUCE			14807.95
RH_LLMW	SORT			16836.13
RH_LLMW	STABILIZATION			16836.13
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM			1554.05
RH_LLW_GTCIII	ENTERING.THE.SYSTEM			41035.30
RH_TRU	ASSAY			9866.04
RH_TRU	ENTERING.THE.SYSTEM			7735.87
RH_TRU	FACILITY.1.RECEIVING			7735.87
RH_TRU	FACILITY.1.SHIPPING			4998.83
RH_TRU	FACILITY.WIPP			4998.83
RH_TRU	PACKAGE.FOR.TREATMENT			4998.83
RH_TRU	RECEIVE.FOR.PROCESSING			7735.87
RH_TRU	REMOVE.CONTAINER			8112.02
RH_TRU	RESTRICTED.WASTE.MANAGEMENT			131.62
RH_TRU	RH.CASK.LOAD.IN			7735.87
RH_TRU	RH.CASK.LOAD.OUT			4998.83
RH_TRU	SHIP.TO.STORAGE			4998.83
RH_TRU	SIZE.REDUCE			3667.01
RH_TRU	SORT			4867.21
RH_TRU_SUSPECT	DECON.OVERPACK			763.70
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM			379.95
RH_TRU_SUSPECT	FACILITY.1.RECEIVING			1139.85
RH_TRU_SUSPECT	FACILITY.1.SHIPPING			763.70
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			1139.85

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
RH_TRU_SUSPECT	RECEIVE.OVERPACK											
RH_TRU_SUSPECT	REMOVE.OVERPACK											
RH_TRU_SUSPECT	RH.CASK.LOAD.IN											
RH_TRU_SUSPECT	SHIP.FOR.REUSE											
RH_TRUM	ASSAY											
RH_TRUM	ENTERING.THE.SYSTEM	448.47	124.40	124.40	167.68	149.59	158.64	167.68	178.68	201.30	205.82	4067.41
RH_TRUM	FACILITY.1.RECEIVING											
RH_TRUM	FACILITY.1.SHIPPING											
RH_TRUM	FACILITY.WIPP											
RH_TRUM	PACKAGE.FOR.TREATMENT											
RH_TRUM	RECEIVE.FOR.PROCESSING											
RH_TRUM	REMOVE.CONTAINER											
RH_TRUM	REMOVE.PB.SHIELDING											
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT											
RH_TRUM	RH.CASK.LOAD.IN											
RH_TRUM	RH.CASK.LOAD.OUT											
RH_TRUM	SHIP.FOR.REUSE											
RH_TRUM	SHIP.TO.STORAGE											
RH_TRUM	SIZE.REDUCE											
RH_TRUM	SORT											
SODIUM	ENTERING.THE.SYSTEM											
SR_CAPSULES	ENTERING.THE.SYSTEM	1.12										
SR_CAPSULES	FACILITY.1.RECEIVING											
SR_CAPSULES	FACILITY.1.SHIPPING											
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
SR_CAPSULES	RECEIVE.FOR.PROCESSING											
SR_CAPSULES	RH.CASK.LOAD.IN											
SR_CAPSULES	RH.CASK.LOAD.OUT											
SR_CAPSULES	SHIP.TO.STORAGE											
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.02	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04
UNIRRAD_UR	FACILITY.1.RECEIVING											
UNIRRAD_UR	FACILITY.1.SHIPPING											
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL											
UNIRRAD_UR	RECEIVE.FOR.PROCESSING											
UNIRRAD_UR	SHIP.TO.STORAGE											

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
RH_TRU_SUSPECT	RECEIVE.OVERPACK		30.99	120.99	182.97	120.99	120.99	137.97	106.98	75.99	75.99	
RH_TRU_SUSPECT	REMOVE.OVERPACK		30.99	120.99	182.97	120.99	120.99	137.97	106.98	75.99	75.99	
RH_TRU_SUSPECT	RH.CASK.LOAD.IN		30.99	120.99	182.97	120.99	120.99	137.97	106.98	75.99	75.99	
RH_TRU_SUSPECT	SHIP.FOR.REUSE		20.76	81.06	122.59	81.06	81.06	92.44	71.68	50.91	50.91	
RH_TRUM	ASSAY		742.01	683.15	670.98	497.95	633.77	359.31	482.54	585.01	545.35	706.23
RH_TRUM	ENTERING.THE.SYSTEM	7736.54	7704.87	366.62	324.75	346.20	444.20	527.55	634.19	1004.52	1064.49	1259.17
RH_TRUM	FACILITY.1.RECEIVING		3685.88	3427.74	2780.71	2588.66	2536.16	1739.81	2120.44	1196.31	1210.38	1144.76
RH_TRUM	FACILITY.1.SHIPPING		741.56	633.33	669.89	789.07	865.93	688.25	1059.74	786.64	842.48	1048.29
RH_TRUM	FACILITY.WIPP		373.55	341.58	339.95	248.97	319.44	180.29	241.91	293.14	272.67	353.11
RH_TRUM	PACKAGE.FOR.TREATMENT		373.55	341.58	339.95	248.97	319.44	180.29	241.91	293.14	272.67	353.11
RH_TRUM	RECEIVE.FOR.PROCESSING		3670.88	3427.74	2795.71	2588.66	2536.16	1739.81	2120.44	1196.31	1210.38	1144.76
RH_TRUM	REMOVE.CONTAINER		908.55	802.74	815.71	847.11	961.16	704.81	1055.44	881.31	910.38	1144.76
RH_TRUM	REMOVE.PB.SHIELDING		2762.33	2625.00	1980.00	1741.55	1575.00	1035.00	1065.00	315.00	300.00	
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT		5.10		8.92		5.10	1.27	1.27	1.27		
RH_TRUM	RH.CASK.LOAD.IN		3670.88	3427.74	2795.71	2588.66	2536.16	1739.81	2120.44	1196.31	1210.38	1144.76
RH_TRUM	RH.CASK.LOAD.OUT		373.55	341.58	339.95	248.97	319.44	180.29	241.91	293.14	272.67	353.11
RH_TRUM	SHIP.FOR.REUSE		368.01	291.76	329.94	540.09	546.49	507.96	817.84	493.49	569.81	695.17
RH_TRUM	SHIP.TO.STORAGE		373.55	341.58	339.95	248.97	319.44	180.29	241.91	293.14	272.67	353.11
RH_TRUM	SIZE.REDUCE		341.10	274.32	263.84	199.71	221.93	159.86	182.44	255.97	254.67	322.66
RH_TRUM	SORT		368.45	341.58	331.03	248.97	314.34	179.02	240.64	291.87	272.67	353.11
SODIUM	ENTERING.THE.SYSTEM				177.00							
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.1.RECEIVING											1.12
SR_CAPSULES	FACILITY.1.SHIPPING											1.12
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											1.12
SR_CAPSULES	RECEIVE.FOR.PROCESSING											1.12
SR_CAPSULES	RH.CASK.LOAD.IN											1.12
SR_CAPSULES	RH.CASK.LOAD.OUT											1.12
SR_CAPSULES	SHIP.TO.STORAGE											1.12
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.04										
UNIRRAD_UR	FACILITY.1.RECEIVING		48.14		24.08	24.08						12.04
UNIRRAD_UR	FACILITY.1.SHIPPING		48.14		24.08	24.08						12.04
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL		48.14		24.08	24.08						12.04
UNIRRAD_UR	RECEIVE.FOR.PROCESSING		48.14		24.08	24.08						12.04
UNIRRAD_UR	SHIP.TO.STORAGE		48.14		24.08	24.08						12.04

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
RH_TRU_SUSPECT	RECEIVE.OVERPACK	90.00		30.99					45.00			
RH_TRU_SUSPECT	REMOVE.OVERPACK	90.00		30.99					45.00			
RH_TRU_SUSPECT	RH.CASK.LOAD.IN	90.00		30.99					45.00			
RH_TRU_SUSPECT	SHIP.FOR.REUSE	60.30		20.76					30.15			
RH_TRUM	ASSAY	667.53	722.92	755.23	734.64	886.19	745.38	729.35	374.12			
RH_TRUM	ENTERING.THE.SYSTEM	1281.59	1304.40	673.15	643.61	605.30	641.49	675.27	347.85			
RH_TRUM	FACILITY.1.RECEIVING	1524.41	1214.40	1626.03	1371.90	1669.76	1295.09	1311.52	1135.86			
RH_TRUM	FACILITY.1.SHIPPING	1093.80	1126.29	806.24	943.81	898.54	990.01	794.26	748.34			
RH_TRUM	FACILITY.WIPP	333.77	361.46	360.37	362.56	424.59	372.69	344.25	252.46			
RH_TRUM	PACKAGE.FOR.TREATMENT	333.77	361.46	380.16	367.96	444.37	372.69	364.67	187.06			
RH_TRUM	RECEIVE.FOR.PROCESSING	1524.41	1214.40	1626.03	1371.90	1654.76	1310.09	1311.52	1135.86			
RH_TRUM	REMOVE.CONTAINER	1164.41	1214.40	966.03	1071.90	1099.76	1115.09	951.52	760.86			
RH_TRUM	REMOVE.PB.SHIELDING	360.00		660.00	300.00	555.00	195.00	360.00	375.00			
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT			5.10	1.27	2.55						
RH_TRUM	RH.CASK.LOAD.IN	1524.41	1214.40	1626.03	1371.90	1654.76	1310.09	1311.52	1135.86			
RH_TRUM	RH.CASK.LOAD.OUT	333.77	361.46	380.16	367.96	444.37	372.69	364.67	187.06			
RH_TRUM	SHIP.FOR.REUSE	760.03	764.83	426.07	575.85	454.17	617.32	429.58	561.28			
RH_TRUM	SHIP.TO.STORAGE	333.77	361.46	380.16	367.96	444.37	372.69	364.67	187.06			
RH_TRUM	SIZE.REDUCE	312.43	340.00	342.05	338.41	368.26	351.81	345.87	169.01			
RH_TRUM	SORT	333.77	361.46	375.06	366.68	441.82	372.69	364.67	187.06			
SODIUM	ENTERING.THE.SYSTEM											
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.1.RECEIVING											
SR_CAPSULES	FACILITY.1.SHIPPING											
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
SR_CAPSULES	RECEIVE.FOR.PROCESSING											
SR_CAPSULES	RH.CASK.LOAD.IN											
SR_CAPSULES	RH.CASK.LOAD.OUT											
SR_CAPSULES	SHIP.TO.STORAGE											
UNIRRAD_UR	ENTERING.THE.SYSTEM											
UNIRRAD_UR	FACILITY.1.RECEIVING			24.08				12.04				
UNIRRAD_UR	FACILITY.1.SHIPPING			24.08				12.04				
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL			24.08				12.04				
UNIRRAD_UR	RECEIVE.FOR.PROCESSING			24.08				12.04				
UNIRRAD_UR	SHIP.TO.STORAGE			24.08				12.04				

Table A.2-1
Alternative 1 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Resource	2027	2028	Total
RH_TRU_SUSPECT	RECEIVE.OVERPACK			1139.85
RH_TRU_SUSPECT	REMOVE.OVERPACK			1139.85
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			1139.85
RH_TRU_SUSPECT	SHIP.FOR.REUSE			763.70
RH_TRUM	ASSAY			11521.66
RH_TRUM	ENTERING.THE.SYSTEM			33579.83
RH_TRUM	FACILITY.1.RECEIVING			33579.82
RH_TRUM	FACILITY.1.SHIPPING			15526.47
RH_TRUM	FACILITY.WIPP			5776.76
RH_TRUM	PACKAGE.FOR.TREATMENT			5776.76
RH_TRUM	RECEIVE.FOR.PROCESSING			33579.82
RH_TRUM	REMOVE.CONTAINER			17375.94
RH_TRUM	REMOVE.PB.SHIELDING			16203.88
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT			31.86
RH_TRUM	RH.CASK.LOAD.IN			33579.82
RH_TRUM	RH.CASK.LOAD.OUT			5776.76
RH_TRUM	SHIP.FOR.REUSE			9749.70
RH_TRUM	SHIP.TO.STORAGE			5776.76
RH_TRUM	SIZE.REDUCE			5044.33
RH_TRUM	SORT			5744.90
SODIUM	ENTERING.THE.SYSTEM			177.00
SR_CAPSULES	ENTERING.THE.SYSTEM			1.12
SR_CAPSULES	FACILITY.1.RECEIVING			1.12
SR_CAPSULES	FACILITY.1.SHIPPING			1.12
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL			1.12
SR_CAPSULES	RECEIVE.FOR.PROCESSING			1.12
SR_CAPSULES	RH.CASK.LOAD.IN			1.12
SR_CAPSULES	RH.CASK.LOAD.OUT			1.12
SR_CAPSULES	SHIP.TO.STORAGE			1.12
UNIRRAD_UR	ENTERING.THE.SYSTEM			144.46
UNIRRAD_UR	FACILITY.1.RECEIVING			144.46
UNIRRAD_UR	FACILITY.1.SHIPPING			144.46
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL			144.46
UNIRRAD_UR	RECEIVE.FOR.PROCESSING			144.46
UNIRRAD_UR	SHIP.TO.STORAGE			144.46

Table A.2-2
Alternative 1 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	1994	1995	1996	1997	1998	1999	2000	2001	2002
RH Storage										
STORAGE.RH.DISP	CANISTERS									
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	MISC_SOURCES									
STORAGE.RH.DISP	RH_LLMW_GTCIII	14.20	14.20	14.20	14.20	14.20	14.20	14.20	42.50	70.80
STORAGE.RH.DISP	RH_LLW_GTCIII	24.30	24.60	24.90	25.20	25.50	25.80	26.10	309.70	1159.90
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**38.50**	**38.80**	**39.10**	**39.40**	**39.70**	**40.00**	**40.30**	**352.20**	**1230.70**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	1419.55	2746.52	4060.99	5853.46	7319.88	8849.02	10402.89	12176.20	14153.07
STORAGE.RH.PROC	RH_TRU	1084.19	1187.59	1226.09	1227.79	1254.69	1279.49	1304.29	1305.99	1307.69
STORAGE.RH.PROC	RH_TRUM	448.47	572.86	697.26	864.94	1014.53	1173.17	1340.85	1519.53	1720.83
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**2970.70**	**4525.47**	**6002.84**	**7964.69**	**9607.60**	**11320.18**	**13066.53**	**15020.22**	**17200.09**
Total RH Storage		**3009.20**	**4564.27**	**6041.94**	**8004.09**	**9647.30**	**11360.18**	**13106.83**	**15372.42**	**18430.79**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	50.20	52.30	54.60	87.50	120.39	214.48	262.67	308.56	446.25
STORAGE.CH.DISP	CH_LLW_GTCIII								283.30	1133.20
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
STORAGE.CH.DISP	UNIRRAD_UR									
Total CH Storage Prior to Disposal		**50.20**	**52.30**	**54.60**	**87.50**	**120.39**	**214.48**	**262.67**	**591.86**	**1579.45**
STORAGE.CH.PROC	CH_LLMW	725.27	747.17	769.07	790.97	812.88	834.77	856.68	878.57	900.48
STORAGE.CH.PROC	CH_TRU	178.94	317.70	428.51	441.19	453.76	490.80	706.45	713.18	756.91
STORAGE.CH.PROC	CH_TRUM	0.72	1.12	1.73	1.93	2.08	2.23	6.58	6.89	7.20
STORAGE.CH.PROC	SODIUM									
STORAGE.CH.PROC	UNIRRAD_UR	12.02	24.06	36.10	48.14	60.18	72.22	84.26	96.30	108.34
Total CH Storage Prior to Processing		**916.95**	**1090.06**	**1235.42**	**1282.24**	**1328.89**	**1400.03**	**1653.97**	**1694.95**	**1772.93**
Total CH Storage		**967.15**	**1142.36**	**1290.02**	**1369.73**	**1449.28**	**1614.50**	**1916.63**	**2286.81**	**3352.38**
Grand Total		**3976.36**	**5706.63**	**7331.96**	**9373.82**	**11096.59**	**12974.69**	**15023.47**	**17659.23**	**21783.16**

Table A.2-2
Alternative 1 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2003	2004	2005	2006	2007	2008	2009	2010	2011
RH Storage										
STORAGE.RH.DISP	CANISTERS								451.00	902.00
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	MISC_SOURCES							15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	99.10	184.10	269.10	410.70	552.30	693.90	835.50	892.20	920.50
STORAGE.RH.DISP	RH_LLW_GTCIII	2576.60	5126.50	8526.20	13908.90	21274.60	28357.10	34873.00	37139.60	38556.30
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**2675.70**	**5310.60**	**8795.30**	**14319.60**	**21826.90**	**29051.00**	**35723.50**	**38497.80**	**40393.80**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00			
STORAGE.RH.PROC	RH_LLMW	16170.65	18967.64	21598.60	19572.12	17829.19	15649.29	13798.02	12181.49	10565.14
STORAGE.RH.PROC	RH_TRU	1309.39	1311.09	1312.79	1055.53	891.64	663.24	507.04	418.94	316.25
STORAGE.RH.PROC	RH_TRUM	1926.65	5994.06	13730.60	17749.60	14688.47	12232.51	9990.05	7898.09	6685.84
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**19425.19**	**26291.29**	**36660.48**	**38395.74**	**33427.81**	**28563.54**	**24298.61**	**20502.02**	**17570.72**
Total RH Storage		**22100.89**	**31601.89**	**45455.78**	**52715.34**	**55254.71**	**57614.54**	**60022.11**	**58999.82**	**57964.52**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	614.52	793.61	942.10	1147.19	1352.28	1572.67	1793.05	1928.54	2035.63
STORAGE.CH.DISP	CH_LLW_GTCIII	2549.60	5099.20	8498.60	13881.00	21246.40	28328.60	34844.20	37110.50	38526.90
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
STORAGE.CH.DISP	UNIRRAD_UR				48.14	48.14	72.22	96.30	96.30	96.30
Total CH Storage Prior to Disposal		**3164.12**	**5892.81**	**9440.70**	**15076.33**	**22646.82**	**29973.48**	**36733.55**	**39135.34**	**40658.83**
STORAGE.CH.PROC	CH_LLMW	922.38	944.27	966.17	864.35	758.04	668.41	586.00	565.33	512.08
STORAGE.CH.PROC	CH_TRU	812.88	851.06	887.19	750.05	662.49	580.80	445.68	388.35	265.12
STORAGE.CH.PROC	CH_TRUM	7.51	8.46	10.68	14.93	13.70	19.92	19.92	9.98	9.22
STORAGE.CH.PROC	SODIUM						177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	120.38	132.42	144.46	96.32	96.32	72.24	48.16	48.16	48.16
Total CH Storage Prior to Processing		**1863.15**	**1936.21**	**2008.51**	**1725.65**	**1530.54**	**1518.37**	**1276.76**	**1188.81**	**1011.58**
Total CH Storage		**5027.28**	**7829.02**	**11449.21**	**16801.98**	**24177.36**	**31491.86**	**38010.31**	**40324.15**	**41670.40**
Grand Total		**27128.16**	**39430.91**	**56904.99**	**69517.33**	**79432.07**	**89106.40**	**98032.42**	**99323.98**	**99634.92**

Table A.2-2
Alternative 1 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2012	2013	2014	2015	2016	2017	2018	2019	2020
RH Storage										
STORAGE.RH.DISP	CANISTERS	1353.00	1804.00	2255.00	2706.00	3157.00	3608.00	4059.00	4510.00	4961.00
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	934.70	999.16	1060.81	1122.46	1184.12	1245.77	1307.43	1369.09	1430.74
STORAGE.RH.DISP	RH_LLW_GTCIII	39264.80	40079.20	40185.40	40291.60	40397.80	40504.00	40610.20	40716.40	40822.60
STORAGE.RH.DISP	RH_TRU		9.00					32.19	77.19	95.19
STORAGE.RH.DISP	RH_TRUM							19.80	25.19	44.98
STORAGE.RH.DISP	SR_CAPSULES				1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Disposal		**41567.50**	**42906.35**	**43516.21**	**44136.18**	**44755.04**	**45373.90**	**46044.74**	**46713.99**	**47370.63**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES									
STORAGE.RH.PROC	RH_LLMW	9617.54	10144.13	10922.92	11419.60	12363.76	13030.42	11157.84	8819.21	6498.03
STORAGE.RH.PROC	RH_TRU	299.55	404.55	548.11	698.11	833.11	920.60	880.37	760.12	640.94
STORAGE.RH.PROC	RH_TRUM	5199.59	5007.80	4861.91	4976.32	4733.50	4823.50	3870.62	3142.33	2077.86
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12						
Total RH Storage Prior to Processing		**15120.18**	**15559.97**	**16336.44**	**17096.41**	**17932.75**	**18776.90**	**15911.22**	**12724.04**	**9219.21**
Total RH Storage		**56687.68**	**58466.33**	**59852.65**	**61232.59**	**62687.79**	**64150.80**	**61955.96**	**59438.02**	**56589.84**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	2113.32	2364.79	2613.46	2862.13	3095.50	3328.87	3546.94	3765.02	3967.80
STORAGE.CH.DISP	CH_LLW_GTCIII	39235.10	40181.71	40420.13	40658.54	40896.95	41135.37	41373.78	41612.19	41850.61
STORAGE.CH.DISP	CH_TRU							51.15	112.72	170.01
STORAGE.CH.DISP	CH_TRUM						9.00	54.00	99.00	135.00
STORAGE.CH.DISP	UNIRRAD_UR	96.30	96.30	96.30	108.34	108.34	108.34	132.42	132.42	132.42
Total CH Storage Prior to Disposal		**41444.72**	**42642.80**	**43129.88**	**43629.01**	**44100.79**	**44581.58**	**45158.29**	**45721.36**	**46255.84**
STORAGE.CH.PROC	CH_LLMW	470.98	421.05	398.65	373.15	376.95	368.47	339.07	329.10	249.51
STORAGE.CH.PROC	CH_TRU	201.37	351.37	616.82	752.89	951.02	1110.02	1007.42	858.80	801.59
STORAGE.CH.PROC	CH_TRUM	8.91	251.11	565.80	805.80	985.80	1279.80	1300.80	1249.80	1126.80
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	48.16	48.16	48.16	36.12	36.12	36.12	12.04	12.04	12.04
Total CH Storage Prior to Processing		**906.42**	**1248.69**	**1806.43**	**2144.96**	**2526.89**	**2971.40**	**2836.32**	**2626.73**	**2366.94**
Total CH Storage		**42351.14**	**43891.49**	**44936.31**	**45773.96**	**46627.68**	**47552.98**	**47994.61**	**48348.09**	**48622.78**
Grand Total		**99038.82**	**102357.81**	**104788.96**	**107006.56**	**109315.47**	**111703.78**	**109950.57**	**107786.11**	**105212.62**

Table ..2-2
Alternative 1 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2021	2022	2023	2024	2025	2026	2027	2028
RH Storage									
STORAGE.RH.DISP	CANISTERS	5412.00	5863.00	6314.00	6765.00	7216.00	7667.00	8118.00	8569.00
STORAGE.RH.DISP	CS_CAPSULES		2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	1492.39	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05
STORAGE.RH.DISP	RH_LLW_GTCIII	40928.80	41035.00	41035.30	41035.30	41035.30	41035.30	41035.30	41035.30
STORAGE.RH.DISP	RH_TRU	101.40	85.80						
STORAGE.RH.DISP	RH_TRUM	44.98	65.40						
STORAGE.RH.DISP	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Disposal		**47995.69**	**48621.76**	**48921.85**	**49372.85**	**49823.85**	**50274.85**	**50725.85**	**51176.85**
STORAGE.RH.PROC	CS_CAPSULES	2.38							
STORAGE.RH.PROC	MISC_SOURCES								
STORAGE.RH.PROC	RH_LLMW	4148.57	1980.74						
STORAGE.RH.PROC	RH_TRU	439.46	225.46						
STORAGE.RH.PROC	RH_TRUM	1424.26	788.01						
STORAGE.RH.PROC	SR_CAPSULES								
Total RH Storage Prior to Processing		**6014.66**	**2994.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total RH Storage		**54010.36**	**51615.97**	**48921.85**	**49372.85**	**49823.85**	**50274.85**	**50725.85**	**51176.85**
CH Storage									
STORAGE.CH.DISP	CH_LLMW_GTCIII	4170.58	4373.35	4375.65	4375.65	4375.65	4375.65	4375.65	4375.65
STORAGE.CH.DISP	CH_LLW_GTCIII	42089.02	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44
STORAGE.CH.DISP	CH_TRU	172.87	220.72						
STORAGE.CH.DISP	CH_TRUM	171.00	162.00						
STORAGE.CH.DISP	UNIRRAD_UR	132.42	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total CH Storage Prior to Disposal		**46735.88**	**47227.97**	**46847.55**	**46847.55**	**46847.55**	**46847.55**	**46847.55**	**46847.55**
STORAGE.CH.PROC	CH_LLMW	166.49	86.18						
STORAGE.CH.PROC	CH_TRU	720.96	626.65						
STORAGE.CH.PROC	CH_TRUM	855.64	819.52						
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	12.04							
Total CH Storage Prior to Processing		**1932.13**	**1709.35**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**
Total CH Storage		**48668.02**	**48937.32**	**47024.55**	**47024.55**	**47024.55**	**47024.55**	**47024.55**	**47024.55**
Grand Total		**102678.38**	**100553.29**	**95946.40**	**96397.40**	**96848.40**	**97299.40**	**97750.40**	**98201.40**

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SOLID WASTE AND MATERIALS SYSTEMS ALTNERATIVES STUDY

VOLUME III

APPENDIX A.3
Alternative 2 Computer Modeling & Output

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A.3 ALTERNATIVE 2 MODEL ASSUMPTIONS, FLOW DIAGRAMS, AND RESULTS

This section provides the waste processing assumptions, functional flow diagrams, and model results for Alternative 2. The first section, which addresses the waste processing assumptions, describes the assumptions associated with each of the functional flow diagrams presented in Section 6.3. These assumptions identify volume increases or decreases associated with waste processes, as well as waste routing splits based on percentages of the volume. The second section shows the functional flow diagrams for Alternative 2 which incorporate these assumptions. The model results of annual throughputs and storage levels that correspond with each of these diagrams are provided in the third section.

A.3.1. Assumptions Associated with Functional Flow Diagrams

The assumptions associated with the functional flow diagrams presented in Section 6.3 are waste stream specific. The waste stream specific assumptions follow.

A.3.1.1 Assumptions for Remote-Handled Transuranic Waste.

Incoming RH TRU waste considered "suspect" received a 3.0 increase to account for the overpack. The assumptions that apply to the functions for processing remote-handled transuranic waste follow:

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.6 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 37.5% was assumed to be the waste and 62.5% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.3.1.2 Assumptions for Contact-Handled Transuranic Waste in Large Containers and Drums Requiring Specialized Treatment.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.6. In addition, it was assumed that 37.5% of the volume exiting this function would be waste and the remaining 62.5% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Assay. After TRU waste assay, 15% of the "suspect" TRU waste volumes were assumed to be CH_LLMW.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.3.1.3 Assumptions for Remote-Handled Low Level Mixed Waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.7 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 41.2% was assumed to be the waste and 58.8% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Stabilization. Waste volumes requiring stabilization were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.3.1.4 Assumptions for Contact-Handled Low Level Mixed Waste in Large Containers.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal for Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.5% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

- WRAP 2A. It was assumed that any LLMW requiring non-thermal stabilization would be routed to WRAP 2A for final processing prior to disposal.

- Thermal Treatment. It was assumed that any LLMW requiring thermal destruction would be sent to a commercial thermal treatment facility for processing prior to disposal.

A.3.1.5 Assumptions for Greater Than Category 3 Low-Level Waste.

No assumptions were made for this waste.

A.3.1.6 Assumptions for Contaminated Metallic Sodium.

No assumptions were made for this material.

A.3.1.7 Assumptions for Unirradiated Uranium.

No assumptions were made for this material.

A.3.1.8 Assumptions for Miscellaneous Sources.

No assumptions were made for these waste and materials.

A.3.1.9 Assumptions for Cesium/Strontium Capsules.

No assumptions were made for this material.

A.3.1.10 Assumptions for High Level Waste Canisters.

No assumptions were made for this waste.

A.3.2 Functional Flow Diagrams Including Assumptions for Alternative 2

Figures A.3-1 through A.3-12 show the Alternative 2 functional flow diagrams. These flow diagrams include the assumptions defined in section A.3.1 and also incorporate additional functions added due to the requirements of the model to reflect the macro-level system. These functions include, among others, "RH Facility In," "RH Facility Out," "CH TRU Facility In," and "CH TRU Facility Out." These functions were added to the flow diagrams every occurrence that waste entered or exited a macro level processing facility in Alternative 2, such as "Remote Handled Processing Facility" or "CH TRU Waste Processing Facility."

These functional flow diagrams for Alternative 2 are the basis for the model results presented in Sections A.3.3 and A.3.4.

Figure A.3-1. Alternative 2 Functional Flow Diagram for High Level Waste Canisters.

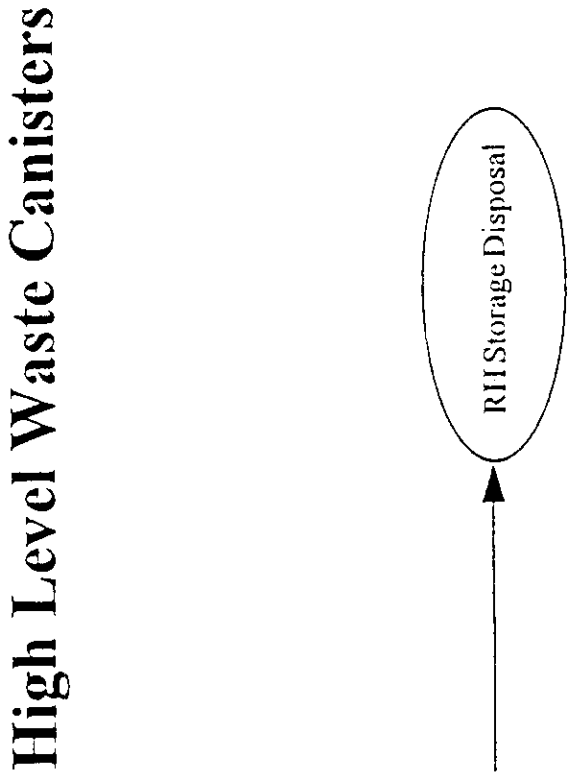
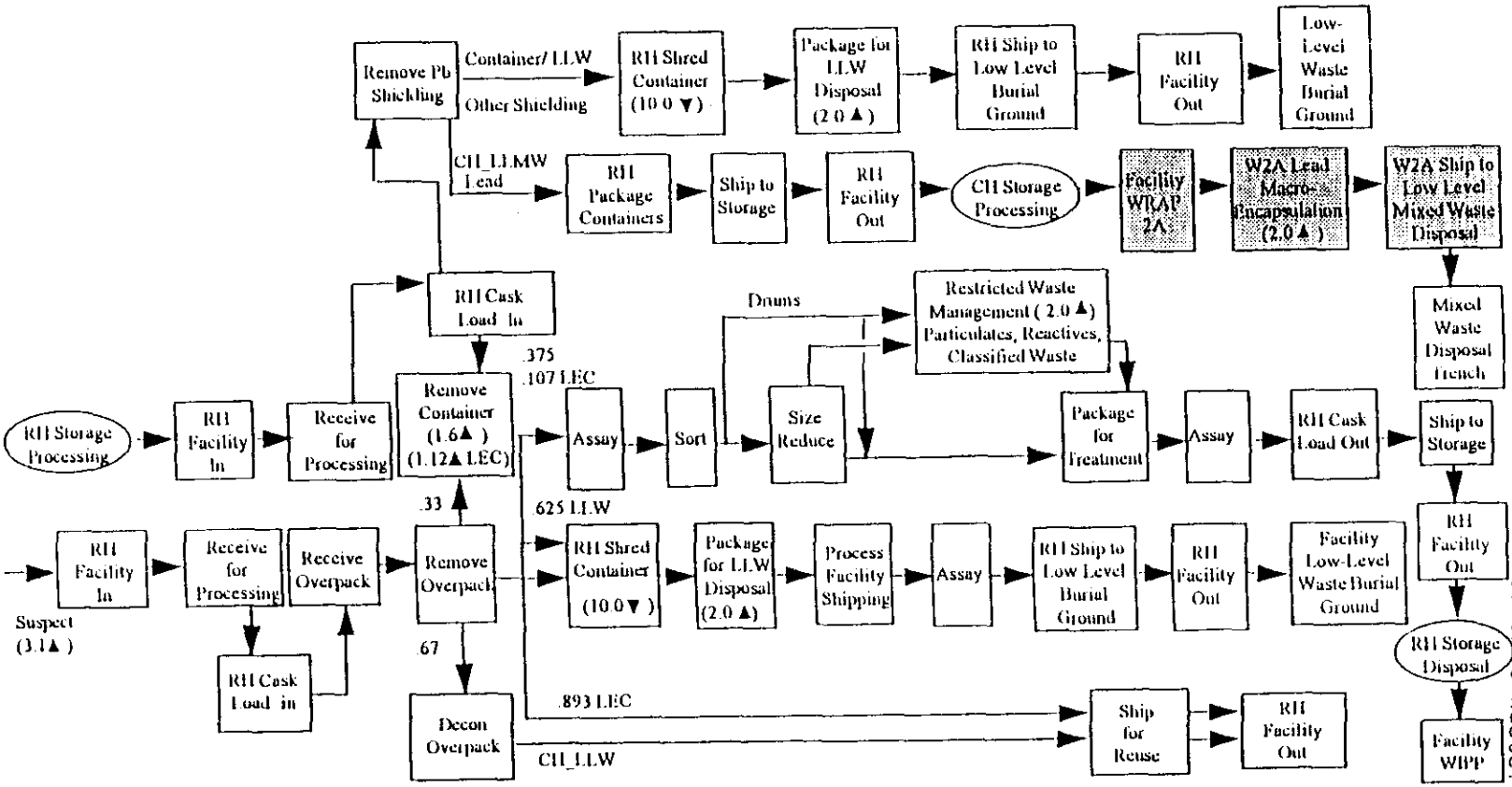


Figure A.3-2. Alternative 2 Functional Flow Diagram for Remote-Handled Transuranic Waste.



Contact-Handled Transuranic Waste In Large Containers & Special Treatment Stream

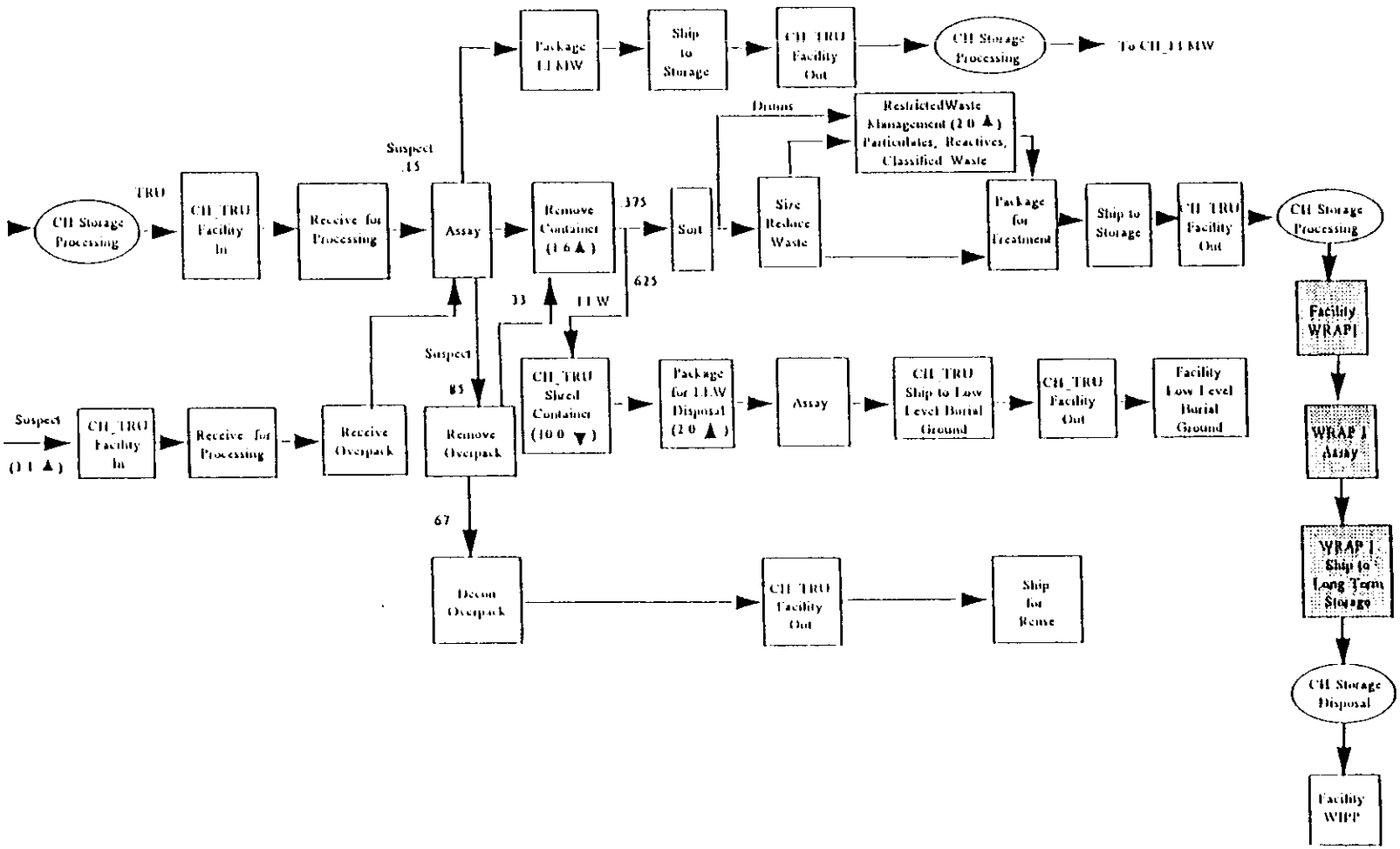


Figure A.3-3. Alternative 2 Functional Flow Diagram for Contact-Handled Transuranic Waste in Large Containers and Requiring Special Treatment

Figure A.3-4. Alternative 2 Functional Flow Diagram for Contaminated Soils and Buried Pre-1970 Waste.

CH-TRU Soils & Pre 1970 Buried Waste

Not Modeled

Figure A.3-5. Alternative 2 Functional Flow Diagram for Remote-Handled Low Level Mixed Waste.

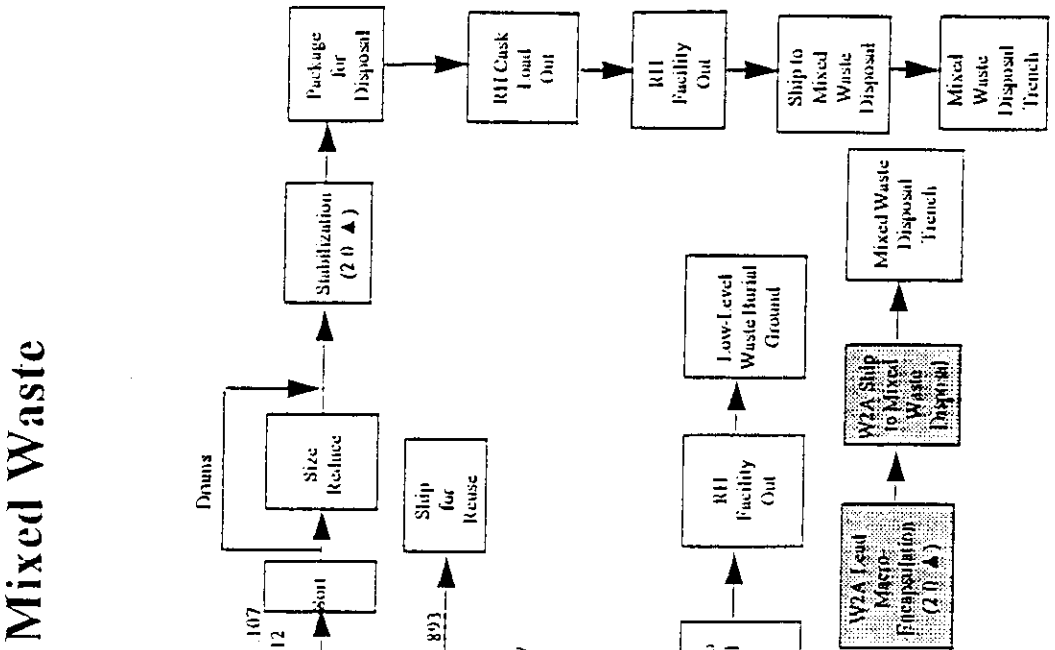


Figure A.3-6. Alternative 2 Functional Flow Diagram for Contact-Handled Low Level Mixed Waste.

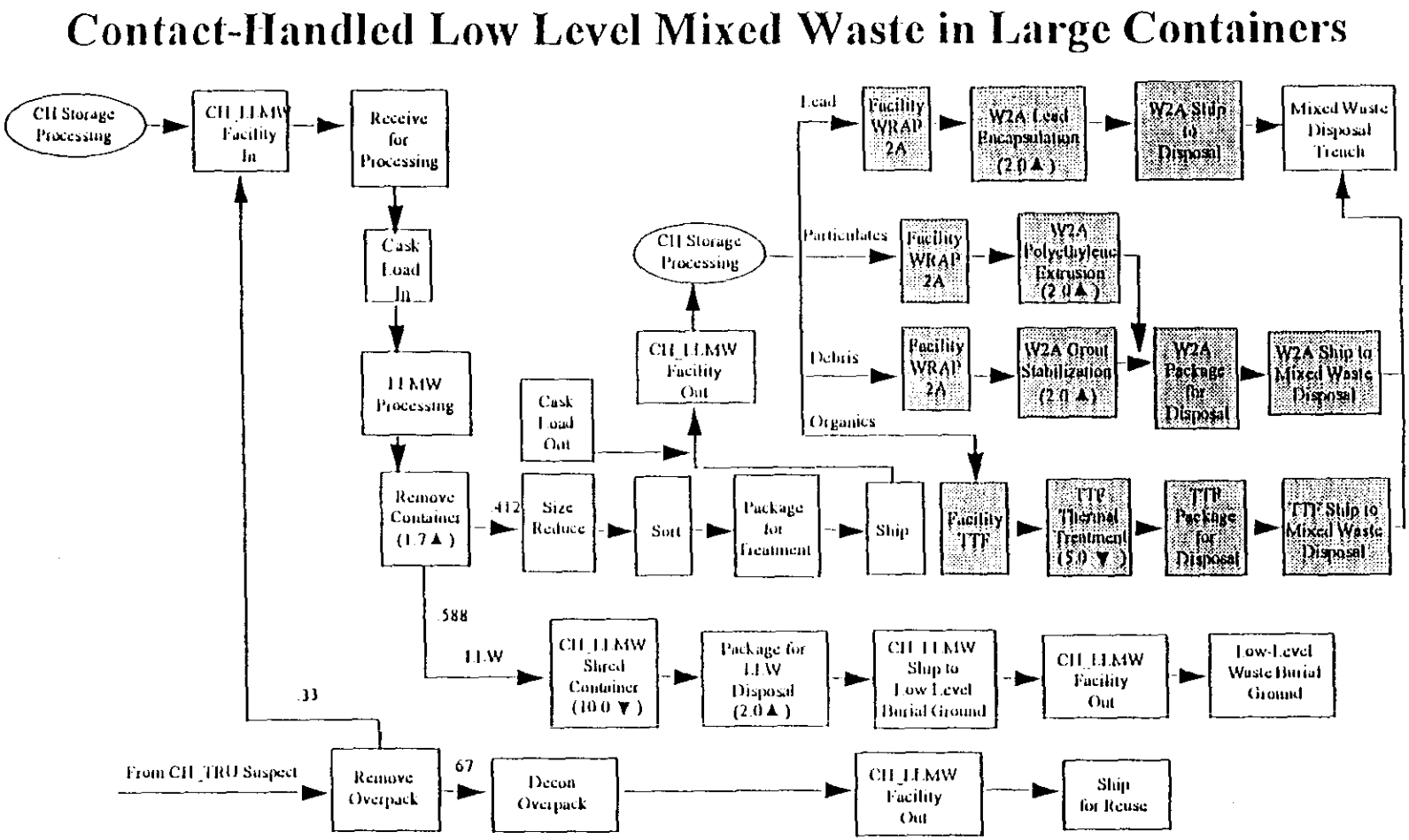


Figure A.3-7. Alternative 2 Functional Flow Diagram for Remote-Handled Greater Than Category III Waste.

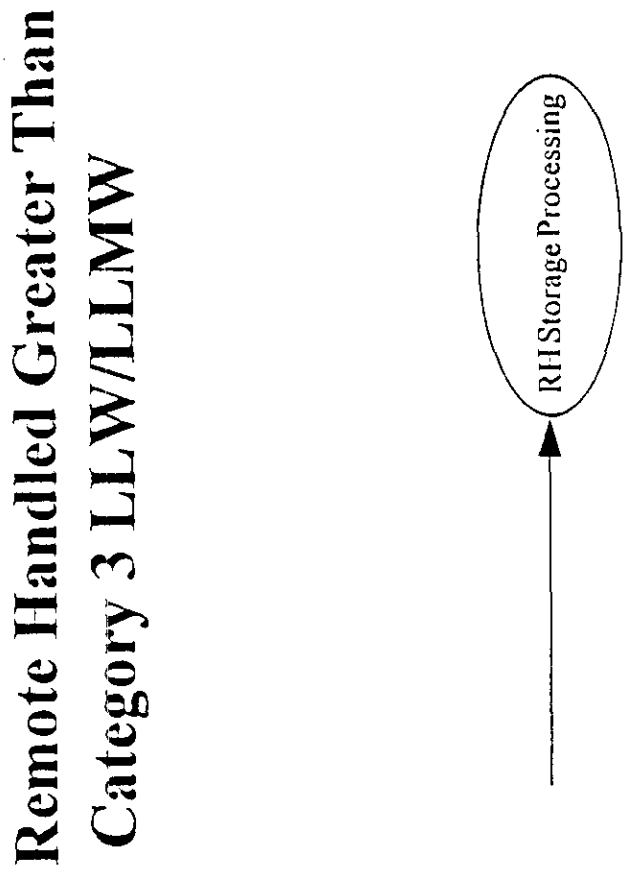


Figure A.3-8. Alternative 2 Functional Flow Diagram for Contact-Handled Greater Than Category III Waste.

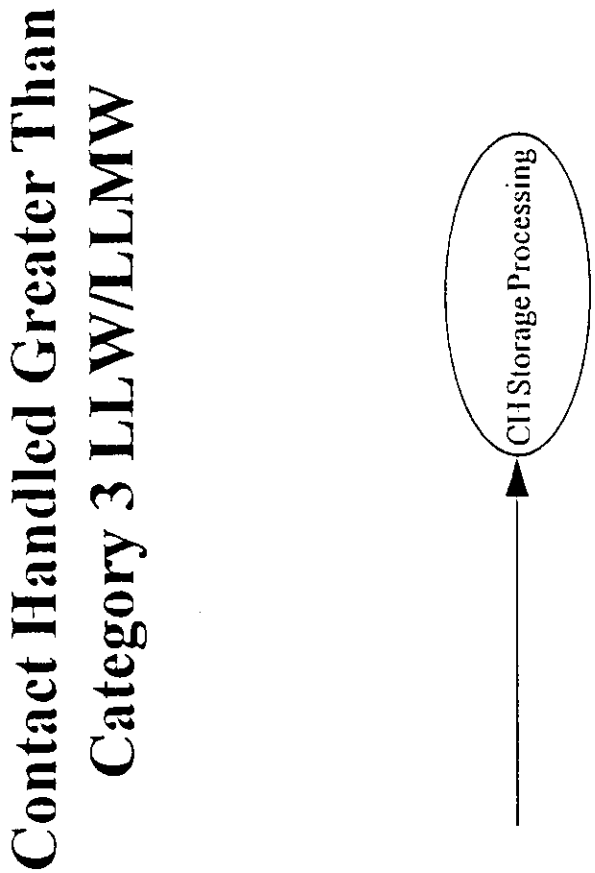


Figure A.3-9. Alternative 2 Functional Flow Diagram for Contaminated Metallic Sodium.

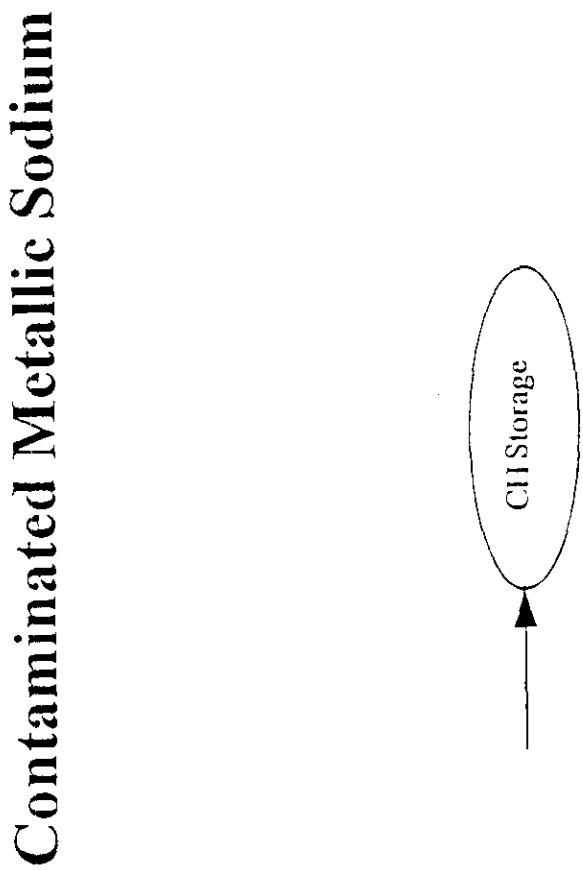


Figure A.3-10. Alternative 2 Functional Flow Diagram for Unirradiated Uranium.

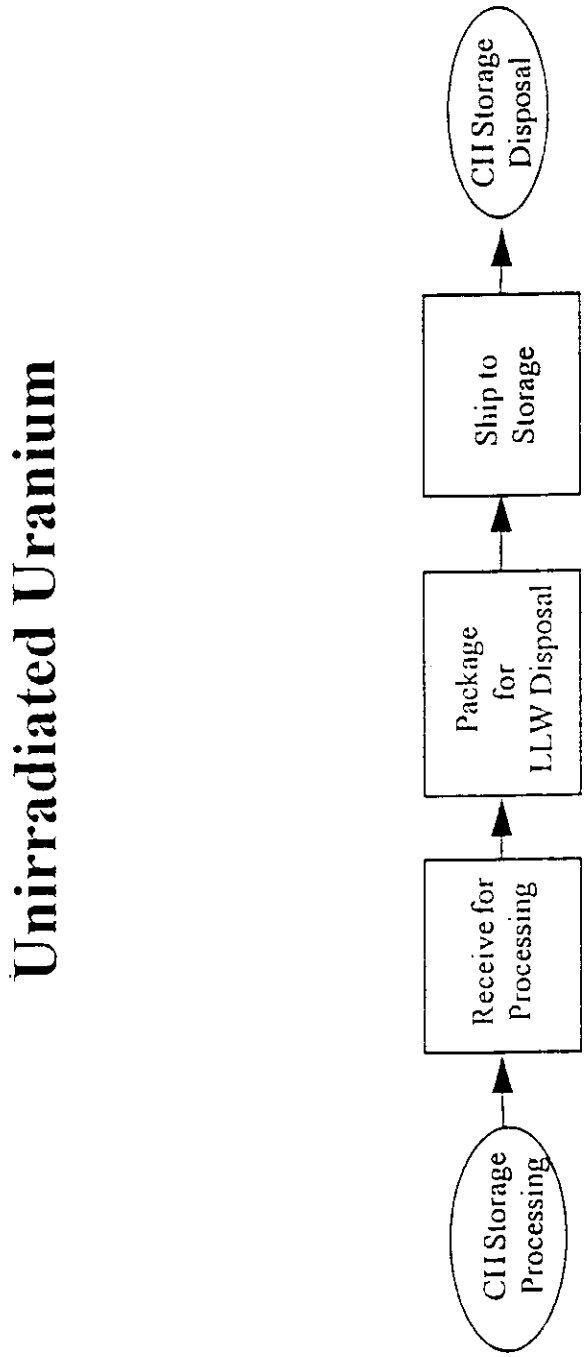


Figure A.3-11. Alternative 2 Functional Flow Diagram for Miscellaneous Remote-Handled Sources.

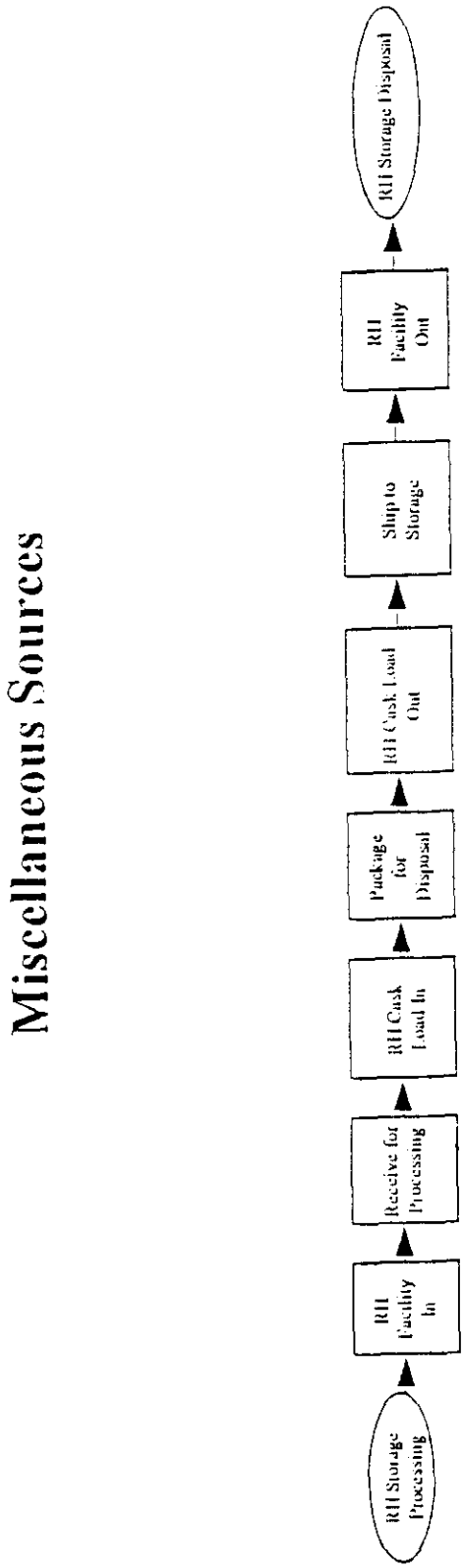
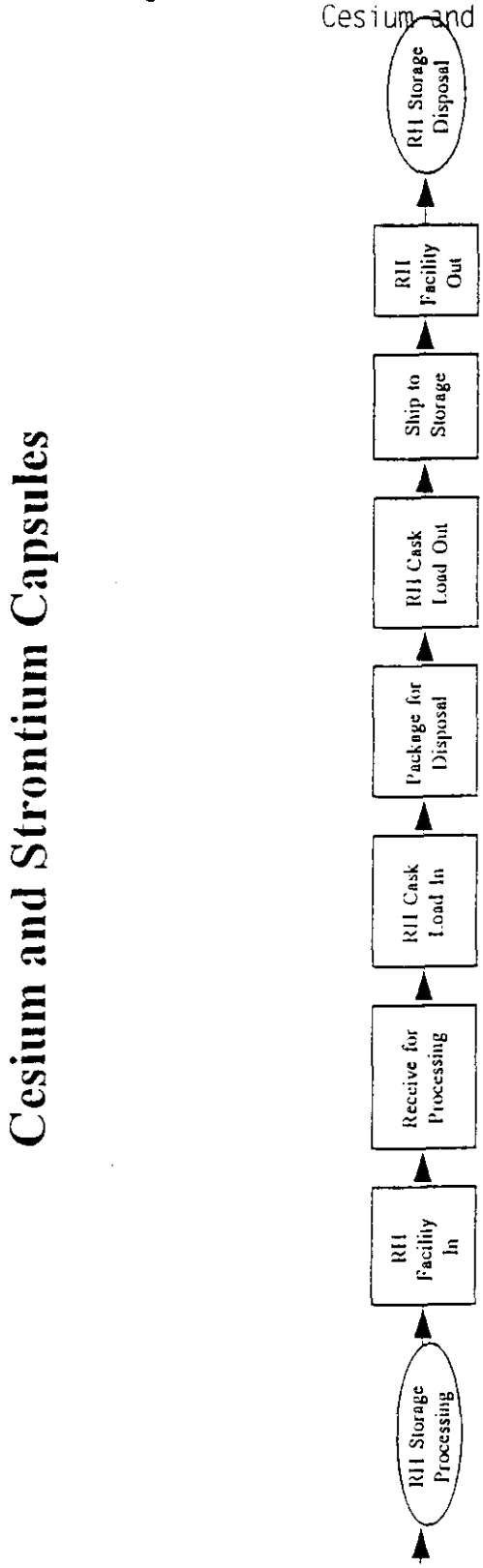


Figure A.3-12. Alternative 2 Functional Flow Diagram for Cesium and Strontium Capsules.



A.3.3 Model Throughput Results for Alternative 2

Table A.3-1 shows the annual throughput results in cubic meters for each function shown in the functional flow diagrams for Alternative 2.

A.3.4 Model Storage Results for Alternative 2

Table A.3-2 shows the annual storage results in cubic meters for each storage facility for Alternative 2.

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CANISTERS	ENTERING.THE.SYSTEM										
CH_LLMW	DECON.OVERPACK										180.71
CH_LLMW	ENTERING.THE.SYSTEM	725.27	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90
CH_LLMW	FACILITY.CH.LLMW.IN								364.01	252.66	472.91
CH_LLMW	FACILITY.CH.LLMW.OUT								254.96	176.96	323.03
CH_LLMW	FACILITY.CH.TRU.OUT										314.71
CH_LLMW	FACILITY.LLMW.DISPOSAL								196.11	206.76	214.13
CH_LLMW	FACILITY.TTF										
CH_LLMW	FACILITY.WRAP.2A								112.06	103.38	107.06
CH_LLMW	LLMW.PROCESSING								364.01	252.66	203.19
CH_LLMW	PACKAGE.FOR.TREATMENT								254.96	176.96	142.32
CH_LLMW	PACKAGE.LLMW										314.71
CH_LLMW	RECEIVE.FOR.PROCESSING								364.01	252.66	203.19
CH_LLMW	REMOVE.CONTAINER								364.01	252.66	203.19
CH_LLMW	REMOVE.OVERPACK										269.71
CH_LLMW	RH.CASK.LOAD.IN								364.01	252.66	203.19
CH_LLMW	RH.CASK.LOAD.OUT								254.96	176.96	142.32
CH_LLMW	SHIP.FOR.REUSE										180.71
CH_LLMW	SHIP.TO.STORAGE								254.96	176.96	457.03
CH_LLMW	SIZE.REDUCE								254.96	176.96	142.32
CH_LLMW	SORT								254.96	176.96	142.32
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL										
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL										
CH_LLMW	TTF.THERMAL.TREATMENT										
CH_LLMW	W2A.GROUT.STABILIZATION								98.06	103.38	86.26
CH_LLMW	W2A.LEAD.ENCAPSULATION										
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL								196.11	206.76	214.13
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION										20.80
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL								196.11	206.76	214.13
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	50.20	2.10	2.30	32.90	32.90	94.08	48.19	45.90	137.68	168.28
CH_LLW	ASSAY										166.20
CH_LLW	CH.LLMW.SHRED.CONTAINER								1080.34	996.10	789.50
CH_LLW	CH.SHIP.TO.LLW.BURIAL								216.07	199.22	157.90
CH_LLW	CH.TRU.SHIP.TO.LLW.BURIAL										166.20
CH_LLW	CH.TRU.SHRED.CONTAINER										831.02
CH_LLW	FACILITY.CH.LLMW.OUT								216.07	199.22	157.90
CH_LLW	FACILITY.CH.TRU.OUT										166.20
CH_LLW	FACILITY.LLW.BURIAL								216.07	199.22	324.10
CH_LLW	FACILITY.RH.OUT										
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL								108.03	99.61	162.05
CH_LLW	RH.SHIP.TO.LLW.BURIAL										
CH_LLW	RH.SHRED.CONTAINER										
CH_LLW_GTCIII	ENTERING.THE.SYSTEM								283.30	849.90	1416.40

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANISTERS	ENTERING.THE.SYSTEM							451.00	451.00	451.00	451.00
CH_LLMW	DECON.OVERPACK	226.76	227.09	224.91	228.74	226.76	226.76	180.71	156.59	132.47	62.29
CH_LLMW	ENTERING.THE.SYSTEM	21.90	21.90	47.48	21.90	21.90	21.90	47.51	21.90	21.90	21.90
CH_LLMW	FACILITY.CH.LLMW.IN	614.92	521.32	493.94	475.98	472.04	472.04	406.23	332.74	274.05	136.64
CH_LLMW	FACILITY.CH.LLMW.OUT	420.40	354.83	335.75	323.00	320.33	320.33	276.33	225.94	185.93	92.88
CH_LLMW	FACILITY.CH.TRU.OUT	311.45	320.94	335.68	341.41	338.45	338.45	269.71	233.71	233.71	134.71
CH_LLMW	FACILITY.LLMW.DISPOSAL	205.19	223.48	210.30	205.25	216.83	207.23	211.62	186.12	233.82	208.61
CH_LLMW	FACILITY.TTF			0.45				0.45			
CH_LLMW	FACILITY.WRAP.2A	102.60	99.81	105.10	114.55	108.41	91.69	105.77	104.99	104.98	116.23
CH_LLMW	LLMW.PROCESSING	276.47	182.38	158.26	134.57	133.59	133.59	136.52	99.02	76.33	43.67
CH_LLMW	PACKAGE.FOR.TREATMENT	193.64	127.74	110.85	94.25	93.57	93.57	95.62	69.36	53.47	30.59
CH_LLMW	PACKAGE.LLMW	311.45	320.94	335.68	341.41	338.45	338.45	269.71	233.71	233.71	134.71
CH_LLMW	RECEIVE.FOR.PROCESSING	276.47	182.38	158.26	134.57	133.59	133.59	136.52	99.02	76.33	43.67
CH_LLMW	REMOVE.CONTAINER	276.47	182.38	158.26	134.57	133.59	133.59	136.52	99.02	76.33	43.67
CH_LLMW	REMOVE.OVERPACK	338.45	338.94	335.68	341.41	338.45	338.45	269.71	233.71	197.71	92.97
CH_LLMW	RH.CASK.LOAD.IN	276.47	182.38	158.26	134.57	133.59	133.59	136.52	99.02	76.33	43.67
CH_LLMW	RH.CASK.LOAD.OUT	193.64	127.74	110.85	94.25	93.57	93.57	95.62	69.36	53.47	30.59
CH_LLMW	SHIP.FOR.REUSE	226.76	227.09	224.91	228.74	226.76	226.76	180.71	156.59	132.47	62.29
CH_LLMW	SHIP.TO.STORAGE	505.09	448.68	446.53	435.66	432.02	432.02	365.33	303.07	287.18	165.30
CH_LLMW	SIZE.REDUCE	193.64	127.74	110.85	94.25	93.57	93.57	95.62	69.36	53.47	30.59
CH_LLMW	SORT	193.64	127.74	110.85	94.25	93.57	93.57	95.62	69.36	53.47	30.59
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.09				0.09			
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.09				0.09			
CH_LLMW	TTF.THERMAL.TREATMENT			0.45				0.45			
CH_LLMW	W2A.GROUT.STABILIZATION	85.38	30.68	32.36	43.36	43.36	43.36	45.06	29.35	57.36	44.69
CH_LLMW	W2A.LEAD.ENCAPSULATION										
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL	205.19	223.48	210.21	205.25	216.83	207.23	211.53	186.12	233.82	208.61
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION	17.22	81.06	72.74	59.27	65.06	60.26	60.71	63.71	59.55	59.62
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL	205.19	223.48	210.21	205.25	216.83	207.23	211.53	186.12	233.82	208.61
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	179.09	148.49	205.09	205.09	220.39	220.39	135.49	107.09	77.69	251.47
CH_LLW	ASSAY	171.46	160.21	558.93	540.65	547.02	513.91	493.09	453.54	412.31	676.93
CH_LLW	CH.LLMW.SHRED.CONTAINER	997.82	650.86	581.63	557.94	612.84	556.97	393.76	295.91	294.62	255.44
CH_LLW	CH.SHIP.TO.LLW.BURIAL	199.56	130.17	116.33	111.59	122.57	111.39	78.75	59.18	58.92	51.09
CH_LLW	CH.TRU.SHIP.TO.LLW.BURIAL	171.46	160.21	148.67	136.64	151.27	143.98	108.07	94.60	93.38	337.53
CH_LLW	CH.TRU.SHRED.CONTAINER	857.29	801.06	743.36	683.17	756.33	719.90	540.34	473.02	466.90	1687.62
CH_LLW	FACILITY.CH.LLMW.OUT	199.56	130.17	116.33	111.59	122.57	111.39	78.75	59.18	58.92	51.09
CH_LLW	FACILITY.CH.TRU.OUT	171.46	160.21	148.67	136.64	151.27	143.98	108.07	94.60	93.38	337.53
CH_LLW	FACILITY.LLW.BURIAL	371.02	290.38	675.25	652.24	669.59	625.31	571.85	512.72	471.23	728.01
CH_LLW	FACILITY.RH.OUT			410.25	404.01	395.75	369.94	385.03	358.93	318.93	339.40
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL	185.51	145.19	337.63	326.12	334.79	312.65	285.92	256.36	235.62	364.01
CH_LLW	RH.SHIP.TO.LLW.BURIAL			410.25	404.01	395.75	369.94	385.03	358.93	318.93	339.40
CH_LLW	RH.SHRED.CONTAINER			2051.28	2020.08	1978.77	1849.68	1925.13	1794.68	1594.65	1697.01
CH_LLW_GTCIII	ENTERING.THE.SYSTEM	2549.60	3399.40	5382.40	7365.40	7082.20	6515.60	2266.30	1416.40	708.20	946.61

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00
CH LLMW	DECON.OVERPACK	52.09	18.09	12.06	18.09	12.06	42.21	42.21	24.12	21.94	32.14	
CH LLMW	ENTERING.THE.SYSTEM	47.52	21.90	21.90	21.90	118.48	92.90	21.90	21.90	47.51	21.90	
CH LLMW	FACILITY.CH.LLMW.IN	146.66	57.81	22.87	48.90	141.15	166.97	116.50	92.75	108.64	101.19	
CH LLMW	FACILITY.CH.LLMW.OUT	100.36	39.67	15.47	33.43	98.31	115.03	79.68	63.87	75.10	69.42	
CH LLMW	FACILITY.CH.TRU.OUT	122.74	54.00	9.00	36.00	18.00	18.00	9.00	9.00	18.00	38.97	
CH LLMW	FACILITY.LLMW.DISPOSAL	213.88	193.21	86.14	2.66	200.52	140.67	79.10	79.50	105.51	73.75	
CH LLMW	FACILITY.TTF						0.45			0.45	0.45	
CH LLMW	FACILITY.WRAP.2A	95.01	108.53	29.06	15.34	86.25	72.37	37.47	39.75	52.71	36.83	
CH LLMW	LLMW.PROCESSING	68.92	30.81	4.87	21.90	123.15	103.97	53.50	56.75	75.90	53.22	
CH LLMW	PACKAGE.FOR.TREATMENT	48.27	21.58	3.41	15.34	86.25	72.82	37.47	39.75	53.16	37.28	
CH LLMW	PACKAGE.LLMW	122.74	54.00	9.00	36.00	18.00	18.00	9.00	9.00	18.00	38.97	
CH LLMW	RECEIVE.FOR.PROCESSING	68.92	30.81	4.87	21.90	123.15	103.97	53.50	56.75	75.90	53.22	
CH LLMW	REMOVE.CONTAINER	68.92	30.81	4.87	21.90	123.15	103.97	53.50	56.75	75.90	53.22	
CH LLMW	REMOVE.OVERPACK	77.74	27.00	18.00	27.00	18.00	63.00	63.00	36.00	32.74	47.97	
CH LLMW	RH.CASK.LOAD.IN	68.92	30.81	4.87	21.90	123.15	103.97	53.50	56.75	75.90	53.22	
CH LLMW	RH.CASK.LOAD.OUT	48.27	21.58	3.41	15.34	86.25	72.82	37.47	39.75	53.16	37.28	
CH LLMW	SHIP.FOR.REUSE	52.09	18.09	12.06	18.09	12.06	42.21	42.21	24.12	21.94	32.14	
CH LLMW	SHIP.TO.STORAGE	171.02	75.58	12.41	51.34	104.25	90.82	46.47	48.75	71.16	76.25	
CH LLMW	SIZE.REDUCE	48.27	21.58	3.41	15.34	86.25	72.82	37.47	39.75	53.16	37.28	
CH LLMW	SORT	48.27	21.58	3.41	15.34	86.25	72.82	37.47	39.75	53.16	37.28	
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL						0.09			0.09	0.09	
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL						0.09			0.09	0.09	
CH LLMW	TTF.THERMAL.TREATMENT						0.45			0.45	0.45	
CH LLMW	W2A.GROUT.STABILIZATION	74.41	47.35	15.34	1.33	96.10	57.36	16.67	29.35	40.09	15.34	
CH LLMW	W2A.LEAD.ENCAPSULATION		1.48									
CH LLMW	W2A.PACKAGE.FOR.DISPOSAL	213.88	190.25	86.14	2.66	200.52	140.58	79.10	79.50	105.42	73.66	
CH LLMW	W2A.POLYETHYLENE.EXTRUSION	32.53	47.78	27.73		4.16	12.93	22.88	10.40	12.62	21.49	
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL	213.88	193.21	86.14	2.66	200.52	140.58	79.10	79.50	105.42	73.66	
CH LLMW GTCIII	ENTERING.THE.SYSTEM	248.67	248.67	233.37	233.37	218.07	218.07	202.78	202.78	202.78	2.30	
CH LLW	ASSAY	664.63	765.74	749.66	758.89	833.78	839.75	834.11	831.90	785.81	686.21	
CH LLW	CH.LLMW.SHRED.CONTAINER	313.44	212.56	244.75	220.09	584.01	422.25	553.13	441.94	413.37	339.79	
CH LLW	CH.SHIP.TO.LLW.BURIAL	62.69	42.51	48.95	44.02	116.80	84.45	110.63	88.39	82.67	67.96	
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL	351.88	421.46	449.95	445.28	453.30	452.89	460.24	462.69	452.16	394.15	
CH LLW	CH.TRU.SHRED.CONTAINER	1759.39	2107.29	2249.78	2226.41	2266.51	2264.47	2301.19	2313.43	2260.82	1970.76	
CH LLW	FACILITY.CH.LLMW.OUT	62.69	42.51	48.95	44.02	116.80	84.45	110.63	88.39	82.67	67.96	
CH LLW	FACILITY.CH.TRU.OUT	351.88	421.46	449.95	445.28	453.30	452.89	460.24	462.69	452.16	394.15	
CH LLW	FACILITY.LLW.BURIAL	727.31	808.25	798.61	802.91	950.58	924.20	944.74	920.29	868.48	754.17	
CH LLW	FACILITY.RH.OUT	312.75	344.28	299.71	313.61	380.48	386.86	373.88	369.22	333.65	292.06	
CH LLW	PACKAGE.FOR.LLW.DISPOSAL	363.66	404.13	399.31	401.45	475.29	462.10	472.37	460.15	434.24	377.08	
CH LLW	RH.SHIP.TO.LLW.BURIAL	312.75	344.28	299.71	313.61	380.48	386.86	373.88	369.22	333.65	292.06	
CH LLW	RH.SHRED.CONTAINER	1563.74	1721.42	1498.55	1568.05	1902.40	1934.30	1869.39	1846.08	1668.23	1460.28	
CH LLW GTCIII	ENTERING.THE.SYSTEM	238.41	238.41	238.41	238.41	238.41	238.41	238.41	238.41	238.41		

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2025	2026	2027	2028	Total
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	451.00	451.00	8569.00
CH LLMW	DECON.OVERPACK					2348.80
CH LLMW	ENTERING.THE.SYSTEM					1630.39
CH LLMW	FACILITY.CH.LLMW.IN					6292.93
CH LLMW	FACILITY.CH.LLMW.OUT					4301.00
CH LLMW	FACILITY.CH.TRU.OUT					3505.67
CH LLMW	FACILITY.LLMW.DISPOSAL					3900.37
CH LLMW	FACILITY.TTF					2.24
CH LLMW	FACILITY.WRAP.2A					1949.96
CH LLMW	LLMW.PROCESSING					2787.26
CH LLMW	PACKAGE.FOR.TREATMENT					1952.21
CH LLMW	PACKAGE.LLMW					3505.67
CH LLMW	RECEIVE.FOR.PROCESSING					2787.26
CH LLMW	REMOVE.CONTAINER					2787.26
CH LLMW	REMOVE.OVERPACK					3505.67
CH LLMW	RH.CASK.LOAD.IN					2787.26
CH LLMW	RH.CASK.LOAD.OUT					1952.21
CH LLMW	SHIP.FOR.REUSE					2348.80
CH LLMW	SHIP.TO.STORAGE					5457.87
CH LLMW	SIZE.REDUCE					1952.21
CH LLMW	SORT					1952.21
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL					0.45
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL					0.45
CH LLMW	TTF.THERMAL.TREATMENT					2.24
CH LLMW	W2A.GROUT.STABILIZATION					1135.97
CH LLMW	W2A.LEAD.ENCAPSULATION					1.48
CH LLMW	W2A.PACKAGE.FOR.DISPOSAL					3896.96
CH LLMW	W2A.POLYETHYLENE.EXTRUSION					812.51
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL					3899.93
CH LLMW_GTCIII	ENTERING.THE.SYSTEM					4375.65
CH LLW	ASSAY					12444.75
CH LLW	CH.LLMW.SHRED.CONTAINER					11809.05
CH LLW	CH.SHIP.TO.LLW.BURIAL					2361.81
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL					6056.01
CH LLW	CH.TRU.SHRED.CONTAINER					30280.03
CH LLW	FACILITY.CH.LLMW.OUT					2361.81
CH LLW	FACILITY.CH.TRU.OUT					6056.01
CH LLW	FACILITY.LLW.BURIAL					14806.56
CH LLW	FACILITY.RH.OUT					6388.74
CH LLW	PACKAGE.FOR.LLW.DISPOSAL					7403.28
CH LLW	RH.SHIP.TO.LLW.BURIAL					6388.74
CH LLW	RH.SHRED.CONTAINER					31943.71
CH LLW_GTCIII	ENTERING.THE.SYSTEM					42327.43

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CH_TRU	ASSAY										236.82
CH_TRU	ENTERING.THE.SYSTEM	178.94	138.76	110.81	12.68	12.57	37.04	215.65	6.73	43.73	55.97
CH_TRU	FACILITY.CH.TRU.IN										256.82
CH_TRU	FACILITY.CH.TRU.OUT										627.92
CH_TRU	FACILITY.WIPP										617.82
CH_TRU	FACILITY.WRAP.1										627.92
CH_TRU	PACKAGE.FOR.TREATMENT										627.92
CH_TRU	RECEIVE.FOR.PROCESSING										236.82
CH_TRU	REMOVE.CONTAINER										825.33
CH_TRU	RESTRICTED.WASTE.MANAGEMENT										132.73
CH_TRU	SHIP.TO.STORAGE										627.92
CH_TRU	SIZE.REDUCE										374.47
CH_TRU	SORT										495.19
CH_TRU	W1.ASSAY										617.82
CH_TRU	W1.SHIP.TO.STORAGE										617.82
CH_TRU_SUSPECT	ASSAY										2098.08
CH_TRU_SUSPECT	DECON.OVERPACK										1194.86
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM							519.33	519.36	519.36	519.36
CH_TRU_SUSPECT	FACILITY.CH.TRU.IN										2098.08
CH_TRU_SUSPECT	FACILITY.CH.TRU.OUT										1194.86
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING										2098.08
CH_TRU_SUSPECT	RECEIVE.OVERPACK										2098.08
CH_TRU_SUSPECT	REMOVE.OVERPACK										1783.37
CH_TRU_SUSPECT	SHIP.FOR.REUSE										1194.86
CH_TRUM	ASSAY										5.69
CH_TRUM	ENTERING.THE.SYSTEM	0.72	0.40	0.61	0.20	0.15	0.15	4.35	0.31	0.31	0.31
CH_TRUM	FACILITY.CH.TRU.IN										5.69
CH_TRUM	FACILITY.CH.TRU.OUT										6.83
CH_TRUM	FACILITY.WIPP										6.83
CH_TRUM	FACILITY.WRAP.1										6.83
CH_TRUM	PACKAGE.FOR.TREATMENT										6.83
CH_TRUM	RECEIVE.FOR.PROCESSING										5.69
CH_TRUM	REMOVE.CONTAINER										5.69
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT										3.41
CH_TRUM	SHIP.TO.STORAGE										6.83
CH_TRUM	SIZE.REDUCE										
CH_TRUM	SORT										3.41
CH_TRUM	W1.ASSAY										6.83
CH_TRUM	W1.SHIP.TO.STORAGE										6.83
CS_CAPSULES	ENTERING.THE.SYSTEM	2.38									
CS_CAPSULES	FACILITY.RH.IN										
CS_CAPSULES	FACILITY.RH.OUT										
CS_CAPSULES	PACKAGE.FOR.DISPOSAL										

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CH_TRU	ASSAY	273.57	198.37	105.87	36.14	114.82	78.39	33.76	33.76	27.64	536.29
CH_TRU	ENTERING.THE.SYSTEM	38.17	36.14	36.14	36.14	42.26	42.26	33.76	33.76	27.64	976.29
CH_TRU	FACILITY.CH.TRU.IN	253.57	198.37	105.87	36.14	114.82	78.39	33.76	33.76	27.64	556.29
CH_TRU	FACILITY.CH.TRU.OUT	682.80	573.84	496.23	449.41	538.61	496.80	359.66	319.27	311.93	510.92
CH_TRU	FACILITY.WIPP	668.90	597.84	475.77	469.86	528.52	487.53	379.03	319.27	311.93	495.81
CH_TRU	FACILITY.WRAP.1	682.80	573.84	496.23	449.41	538.61	496.80	359.66	319.27	311.93	510.92
CH_TRU	PACKAGE.FOR.TREATMENT	682.80	573.84	496.23	449.41	538.61	496.80	359.66	319.27	311.93	510.92
CH_TRU	RECEIVE.FOR.PROCESSING	273.57	198.37	105.87	36.14	114.82	78.39	33.76	33.76	27.64	536.29
CH_TRU	REMOVE.CONTAINER	855.99	798.53	733.60	674.57	747.73	711.30	538.12	470.80	464.68	788.20
CH_TRU	RESTRICTED.WASTE.MANAGEMENT	169.21	94.72	56.07	44.67	89.97	70.02	36.79	36.79	33.12	38.00
CH_TRU	SHIP.TO.STORAGE	682.80	573.84	496.23	449.41	538.61	496.80	359.66	319.27	311.93	510.92
CH_TRU	SIZE.REDUCE	359.92	396.39	384.59	360.08	370.66	356.76	286.08	245.68	245.68	434.92
CH_TRU	SORT	513.59	479.12	440.16	404.74	448.64	426.78	322.87	282.48	278.81	472.92
CH_TRU	W1.ASSAY	668.90	597.84	475.77	469.86	528.52	487.53	379.03	319.27	311.93	495.81
CH_TRU	W1.SHIP.TO.STORAGE	668.90	597.84	475.77	469.86	528.52	487.53	379.03	319.27	311.93	495.81
CH_TRU_SUSPECT	ASSAY	2076.36	2139.60	2237.88	2276.07	2256.36	2256.36	1798.08	1558.08	1558.08	898.08
CH_TRU_SUSPECT	DECON.OVERPACK	1182.49	1218.50	1274.47	1296.22	1285.00	1285.00	1024.01	887.33	887.33	511.46
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36
CH_TRU_SUSPECT	FACILITY.CH.TRU.IN	2136.36	2139.60	2237.88	2276.07	2256.36	2256.36	1738.08	1558.08	1558.08	898.08
CH_TRU_SUSPECT	FACILITY.CH.TRU.OUT	1182.49	1218.50	1274.47	1296.22	1285.00	1285.00	1024.01	887.33	887.33	511.46
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	2076.36	2139.60	2237.88	2276.07	2256.36	2256.36	1798.08	1558.08	1558.08	898.08
CH_TRU_SUSPECT	RECEIVE.OVERPACK	2076.36	2139.60	2237.88	2276.07	2256.36	2256.36	1798.08	1558.08	1558.08	898.08
CH_TRU_SUSPECT	REMOVE.OVERPACK	1764.91	1818.66	1902.20	1934.66	1917.91	1917.91	1528.37	1324.37	1324.37	763.37
CH_TRU_SUSPECT	SHIP.FOR.REUSE	1182.49	1218.50	1274.47	1296.22	1285.00	1285.00	1024.01	887.33	887.33	511.46
CH_TRUM	ASSAY	1.30	2.53	9.76	8.60	8.60	8.60	2.22	2.22	2.22	899.42
CH_TRUM	ENTERING.THE.SYSTEM	0.95	2.22	8.60	8.60	8.60	8.60	2.22	2.22	2.22	1279.42
CH_TRUM	FACILITY.CH.TRU.IN	1.30	2.53	9.76	8.60	8.60	8.60	2.22	2.22	2.22	899.42
CH_TRUM	FACILITY.CH.TRU.OUT	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	FACILITY.WIPP	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	FACILITY.WRAP.1	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	PACKAGE.FOR.TREATMENT	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	RECEIVE.FOR.PROCESSING	1.30	2.53	9.76	8.60	8.60	8.60	2.22	2.22	2.22	899.42
CH_TRUM	REMOVE.CONTAINER	1.30	2.53	9.76	8.60	8.60	8.60	2.22	2.22	2.22	899.42
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT	0.78	1.52	5.85	5.16	5.16	5.16	1.33	1.33	1.33	1.33
CH_TRUM	SHIP.TO.STORAGE	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	SIZE.REDUCE										538.32
CH_TRUM	SORT	0.78	1.52	5.85	5.16	5.16	5.16	1.33	1.33	1.33	539.65
CH_TRUM	W1.ASSAY	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CH_TRUM	W1.SHIP.TO.STORAGE	1.56	3.04	11.71	10.32	10.32	10.32	2.67	2.67	2.67	540.99
CS_CAPSULES	ENTERING.THE.SYSTEM										
CS_CAPSULES	FACILITY.RH.IN			2.38							
CS_CAPSULES	FACILITY.RH.OUT			2.38							
CS_CAPSULES	PACKAGE.FOR.DISPOSAL			2.38							

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CH_TRU	ASSAY	629.77	949.11	1055.65	1001.69	975.65	970.71	927.06	979.30	967.06	766.09	
CH_TRU	ENTERING.THE.SYSTEM	973.46	985.41	979.29	981.69	973.17	973.18	967.06	967.06	967.06	14.68	
CH_TRU	FACILITY.CH.TRU.IN	609.77	969.11	1035.65	1001.69	975.65	970.71	947.06	959.30	987.06	746.09	
CH_TRU	FACILITY.CH.TRU.OUT	573.98	694.01	691.49	703.59	653.58	671.65	609.18	647.86	655.27	606.42	
CH_TRU	FACILITY.WIPP	578.99	694.01	701.58	691.59	665.58	659.65	587.79	638.48	643.27	661.20	
CH_TRU	FACILITY.WRAP.1	573.98	694.01	691.49	703.59	653.58	659.65	621.18	647.86	655.27	606.42	
CH_TRU	PACKAGE.FOR.TREATMENT	573.98	694.01	691.49	703.59	653.58	671.65	609.18	647.86	655.27	606.42	
CH_TRU	RECEIVE.FOR.PROCESSING	629.77	949.11	1055.65	1001.69	975.65	970.71	927.06	979.30	967.06	766.09	
CH_TRU	REMOVE.CONTAINER	859.29	1050.09	1072.48	1069.01	1009.31	1004.36	943.89	996.13	1000.72	838.96	
CH_TRU	RESTRICTED.WASTE.MANAGEMENT	58.40	63.96	48.00	62.19	48.00	69.03	42.85	50.19	54.85	103.04	
CH_TRU	SHIP.TO.STORAGE	573.98	694.01	691.49	703.59	653.58	671.65	609.18	647.86	655.27	606.42	
CH_TRU	SIZE.REDUCE	457.18	566.09	595.49	579.22	557.58	533.59	523.49	547.49	545.58	400.33	
CH_TRU	SORT	515.58	630.05	643.49	641.40	605.58	602.62	566.33	597.67	600.43	503.38	
CH_TRU	W1.ASSAY	589.09	683.91	701.58	691.59	665.58	659.65	609.18	647.86	655.27	618.42	
CH_TRU	W1.SHIP.TO.STORAGE	589.09	683.91	701.58	691.59	665.58	659.65	609.18	647.86	655.27	618.42	
CH_TRU_SUSPECT	ASSAY	818.28	360.00	60.00	240.00	120.00	120.00	60.00	60.00	120.00	259.80	
CH_TRU_SUSPECT	DECON.OVERPACK	466.01	205.02	34.17	136.68	68.34	68.34	34.17	34.17	68.34	147.96	
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM	519.36										
CH_TRU_SUSPECT	FACILITY.CH.TRU.IN	878.28	300.00	120.00	180.00	120.00	120.00	60.00	60.00	120.00	259.80	
CH_TRU_SUSPECT	FACILITY.CH.TRU.OUT	466.01	205.02	34.17	136.68	68.34	68.34	34.17	34.17	68.34	147.96	
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	818.28	360.00	60.00	240.00	120.00	120.00	60.00	60.00	120.00	259.80	
CH_TRU_SUSPECT	RECEIVE.OVERPACK	818.28	360.00	60.00	240.00	120.00	120.00	60.00	60.00	120.00	259.80	
CH_TRU_SUSPECT	REMOVE.OVERPACK	695.54	306.00	51.00	204.00	102.00	102.00	51.00	51.00	102.00	220.83	
CH_TRU_SUSPECT	SHIP.FOR.REUSE	466.01	205.02	34.17	136.68	68.34	68.34	34.17	34.17	68.34	147.96	
CH_TRUM	ASSAY	900.10	1057.20	1177.30	1157.40	1257.20	1260.10	1357.30	1317.30	1260.10	1131.80	
CH_TRUM	ENTERING.THE.SYSTEM	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	0.10	
CH_TRUM	FACILITY.CH.TRU.IN	900.10	1057.20	1177.30	1177.40	1257.20	1260.10	1337.30	1337.30	1240.10	1131.80	
CH_TRUM	FACILITY.CH.TRU.OUT	540.12	634.32	706.44	694.56	754.32	756.12	814.44	790.44	756.12	679.20	
CH_TRUM	FACILITY.WIPP	540.12	634.32	706.44	694.56	742.32	756.12	754.44	778.44	720.12	799.20	
CH_TRUM	FACILITY.WRAP.1	540.12	634.32	706.44	694.56	754.32	756.12	814.44	790.44	756.12	679.20	
CH_TRUM	PACKAGE.FOR.TREATMENT	540.12	634.32	706.44	694.56	754.32	756.12	814.44	790.44	756.12	679.20	
CH_TRUM	RECEIVE.FOR.PROCESSING	900.10	1057.20	1177.30	1157.40	1257.20	1260.10	1357.30	1317.30	1260.10	1131.80	
CH_TRUM	REMOVE.CONTAINER	900.10	1057.20	1177.30	1157.40	1257.20	1260.10	1357.30	1317.30	1260.10	1131.80	
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT	0.06		0.06	0.12		0.06	0.06	0.06	0.06	0.12	
CH_TRUM	SHIP.TO.STORAGE	540.12	634.32	706.44	694.56	754.32	756.12	814.44	790.44	756.12	679.20	
CH_TRUM	SIZE.REDUCE	540.00	634.32	706.32	694.32	754.32	756.00	814.32	790.32	756.00	678.96	
CH_TRUM	SORT	540.06	634.32	706.38	694.44	754.32	756.06	814.38	790.38	756.06	679.08	
CH_TRUM	W1.ASSAY	540.12	634.32	706.44	694.56	742.32	756.12	826.44	790.44	756.12	679.20	
CH_TRUM	W1.SHIP.TO.STORAGE	540.12	634.32	706.44	694.56	742.32	756.12	826.44	790.44	756.12	679.20	
CS_CAPSULES	ENTERING.THE.SYSTEM											
CS_CAPSULES	FACILITY.RH.IN											
CS_CAPSULES	FACILITY.RH.OUT											
CS_CAPSULES	PACKAGE.FOR.DISPOSAL											

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2025	2026	2027	2028	Total
CH_TRU	ASSAY					10897.47
CH_TRU	ENTERING.THE.SYSTEM					10897.46
CH_TRU	FACILITY.CH.TRU.IN					10897.47
CH_TRU	FACILITY.CH.TRU.OUT					11874.43
CH_TRU	FACILITY.WIPP					11874.43
CH_TRU	FACILITY.WRAP.1					11874.43
CH_TRU	PACKAGE.FOR.TREATMENT					11874.43
CH_TRU	RECEIVE.FOR.PROCESSING					10897.47
CH_TRU	REMOVE.CONTAINER					17453.07
CH_TRU	RESTRICTED.WASTE.MANAGEMENT					1402.59
CH_TRU	SHIP.TO.STORAGE					11874.43
CH_TRU	SIZE.REDUCE					9121.27
CH_TRU	SORT					10471.84
CH_TRU	W1.ASSAY					11874.43
CH_TRU	W1.SHIP.TO.STORAGE					11874.43
CH_TRU_SUSPECT	ASSAY					23371.11
CH_TRU_SUSPECT	DECON.OVERPACK					13309.84
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM					7790.37
CH_TRU_SUSPECT	FACILITY.CH.TRU.IN					23371.11
CH_TRU_SUSPECT	FACILITY.CH.TRU.OUT					13309.84
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING					23371.11
CH_TRU_SUSPECT	RECEIVE.OVERPACK					23371.11
CH_TRU_SUSPECT	REMOVE.OVERPACK					19865.44
CH_TRU_SUSPECT	SHIP.FOR.REUSE					13309.84
CH_TRUM	ASSAY					12826.97
CH_TRUM	ENTERING.THE.SYSTEM					12826.97
CH_TRUM	FACILITY.CH.TRU.IN					12826.97
CH_TRUM	FACILITY.CH.TRU.OUT					7729.16
CH_TRUM	FACILITY.WIPP					7729.16
CH_TRUM	FACILITY.WRAP.1					7729.16
CH_TRUM	PACKAGE.FOR.TREATMENT					7729.16
CH_TRUM	RECEIVE.FOR.PROCESSING					12826.97
CH_TRUM	REMOVE.CONTAINER					12826.97
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT					32.98
CH_TRUM	SHIP.TO.STORAGE					7729.16
CH_TRUM	SIZE.REDUCE					7663.20
CH_TRUM	SORT					7696.18
CH_TRUM	W1.ASSAY					7729.16
CH_TRUM	W1.SHIP.TO.STORAGE					7729.16
CS_CAPSULES	ENTERING.THE.SYSTEM					2.38
CS_CAPSULES	FACILITY.RH.IN					2.38
CS_CAPSULES	FACILITY.RH.OUT					2.38
CS_CAPSULES	PACKAGE.FOR.DISPOSAL					2.38

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
CS_CAPSULES	RECEIVE.FOR.PROCESSING										
CS_CAPSULES	RH.CASK.LOAD.IN										
CS_CAPSULES	RH.CASK.LOAD.OUT										
CS_CAPSULES	SHIP.TO.STORAGE										
MISC_SOURCES	ENTERING.THE.SYSTEM	15.00									
MISC_SOURCES	FACILITY.RH.IN										
MISC_SOURCES	FACILITY.RH.OUT										
MISC_SOURCES	PACKAGE.FOR.DISPOSAL										
MISC_SOURCES	RECEIVE.FOR.PROCESSING										
MISC_SOURCES	RH.CASK.LOAD.IN										
MISC_SOURCES	RH.CASK.LOAD.OUT										
MISC_SOURCES	SHIP.TO.STORAGE										
RH_LLMW	ENTERING.THE.SYSTEM	1419.55	1326.97	1314.47	1792.47	1466.42	1529.14	1553.87	1773.31	1976.87	2017.58
RH_LLMW	FACILITY.CH.LLMW.IN								4457.59	4557.77	4351.06
RH_LLMW	FACILITY.CH.LLMW.OUT								1895.85	1956.10	1728.06
RH_LLMW	FACILITY.LLMW.DISPOSAL								1895.85	1956.10	1728.06
RH_LLMW	LLMW.PROCESSING								4437.59	4557.77	4368.02
RH_LLMW	PACKAGE.FOR.DISPOSAL								1895.85	1956.10	1728.06
RH_LLMW	RECEIVE.FOR.PROCESSING								4437.59	4557.77	4368.02
RH_LLMW	REMOVE.CONTAINER								4437.59	4557.77	4368.02
RH_LLMW	RH.CASK.LOAD.IN								4437.59	4557.77	4368.02
RH_LLMW	RH.CASK.LOAD.OUT								1895.85	1956.10	1728.06
RH_LLMW	SHIP.FOR.REUSE								3721.42	3814.54	3782.01
RH_LLMW	SHIP.TO.LLMW.DISPOSAL								1895.85	1956.10	1728.06
RH_LLMW	SIZE.REDUCE								821.40	822.34	734.47
RH_LLMW	SORT								947.92	978.05	864.03
RH_LLMW	STABILIZATION								947.92	978.05	864.03
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	14.20							28.30	28.30	28.30
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	24.30	0.30	0.30	0.30	0.30	0.30	0.30	283.60	850.20	1416.70
RH_TRU	ASSAY										
RH_TRU	ENTERING.THE.SYSTEM	1084.19	103.40	38.50	1.70	26.90	24.80	24.80	1.70	1.70	1.70
RH_TRU	FACILITY.RH.IN										
RH_TRU	FACILITY.RH.OUT										
RH_TRU	FACILITY.WIPP										
RH_TRU	PACKAGE.FOR.TREATMENT										
RH_TRU	RECEIVE.FOR.PROCESSING										
RH_TRU	REMOVE.CONTAINER										
RH_TRU	RESTRICTED.WASTE.MANAGEMENT										
RH_TRU	RH.CASK.LOAD.IN										
RH_TRU	RH.CASK.LOAD.OUT										
RH_TRU	SHIP.TO.STORAGE										
RH_TRU	SIZE.REDUCE										
RH_TRU	SORT										

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CS_CAPSULES	RECEIVE.FOR.PROCESSING			2.38							
CS_CAPSULES	RH.CASK.LOAD.IN			2.38							
CS_CAPSULES	RH.CASK.LOAD.OUT			2.38							
CS_CAPSULES	SHIP.TO.STORAGE			2.38							
MISC_SOURCES	ENTERING.THE.SYSTEM										
MISC_SOURCES	FACILITY.RH.IN			15.00							
MISC_SOURCES	FACILITY.RH.OUT			15.00							
MISC_SOURCES	PACKAGE.FOR.DISPOSAL			15.00							
MISC_SOURCES	RECEIVE.FOR.PROCESSING			15.00							
MISC_SOURCES	RH.CASK.LOAD.IN			15.00							
MISC_SOURCES	RH.CASK.LOAD.OUT			15.00							
MISC_SOURCES	SHIP.TO.STORAGE			15.00							
RH_LLMW	ENTERING.THE.SYSTEM	2796.99	2630.96	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	5232.22	5707.17
RH_LLMW	FACILITY.CH.LLMW.IN	4223.82	4008.36	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	4592.08	4706.50
RH_LLMW	FACILITY.CH.LLMW.OUT	1846.33	1509.78	1081.27	1139.81	1188.84	1217.87	1150.94	1251.73	1349.42	1374.06
RH_LLMW	FACILITY.LLMW.DISPOSAL	1846.33	1509.78	1081.27	1139.81	1188.84	1217.87	1150.94	1251.73	1349.42	1374.06
RH_LLMW	LLMW.PROCESSING	4206.85	4028.36	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	4572.08	4706.50
RH_LLMW	PACKAGE.FOR.DISPOSAL	1846.33	1509.78	1081.27	1139.81	1188.84	1217.87	1150.94	1251.73	1349.42	1374.06
RH_LLMW	RECEIVE.FOR.PROCESSING	4206.85	4028.36	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	4572.08	4706.50
RH_LLMW	REMOVE.CONTAINER	4206.85	4028.36	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	4572.08	4706.50
RH_LLMW	RH.CASK.LOAD.IN	4206.85	4028.36	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	4572.08	4706.50
RH_LLMW	RH.CASK.LOAD.OUT	1846.33	1509.78	1081.27	1139.81	1188.84	1217.87	1150.94	1251.73	1349.42	1374.06
RH_LLMW	SHIP.FOR.REUSE	3485.66	3560.19	2035.90	2280.21	2158.05	2605.95	3298.16	4071.80	4354.38	4495.35
RH_LLMW	SHIP.TO.LLMW.DISPOSAL	1846.33	1509.78	1081.27	1139.81	1188.84	1217.87	1150.94	1251.73	1349.42	1374.06
RH_LLMW	SIZE.REDUCE	682.87	564.49	335.47	364.74	389.26	403.77	489.23	579.41	648.01	676.29
RH_LLMW	SORT	923.17	754.89	540.63	569.91	594.42	608.94	575.47	625.87	674.71	687.03
RH_LLMW	STABILIZATION	923.17	754.89	540.63	569.91	594.42	608.94	575.47	625.87	674.71	687.03
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	85.00	85.00	141.60	141.60	141.60	141.60	56.70	28.30	14.20	64.46
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	2549.90	3399.70	5382.70	7365.70	7082.50	6515.90	2266.60	1416.70	708.50	814.40
RH_TRU	ASSAY			221.01	176.13	233.64	228.66	172.87	175.86	201.69	576.42
RH_TRU	ENTERING.THE.SYSTEM	1.70	1.70	1.70	1.70	1.70	1.70	48.60	51.20	51.00	518.56
RH_TRU	FACILITY.RH.IN			159.10	121.70	155.10	180.00	103.15	136.00	103.40	454.65
RH_TRU	FACILITY.RH.OUT			110.51	88.07	116.82	114.33	86.43	87.93	100.85	288.58
RH_TRU	FACILITY.WIPP			110.51	88.07	116.82	114.33	86.43	87.93	100.85	288.58
RH_TRU	PACKAGE.FOR.TREATMENT			110.51	88.07	116.82	114.33	86.43	87.93	100.85	288.58
RH_TRU	RECEIVE.FOR.PROCESSING			159.10	121.70	155.10	180.00	103.15	136.00	103.40	454.65
RH_TRU	REMOVE.CONTAINER			184.18	146.78	194.70	190.55	144.06	146.55	168.08	479.73
RH_TRU	RESTRICTED.WASTE.MANAGEMENT										0.74
RH_TRU	RH.CASK.LOAD.IN			159.10	121.70	155.10	180.00	103.15	136.00	103.40	454.65
RH_TRU	RH.CASK.LOAD.OUT			110.51	88.07	116.82	114.33	86.43	87.93	100.85	288.58
RH_TRU	SHIP.TO.STORAGE			110.51	88.07	116.82	114.33	86.43	87.93	100.85	288.58
RH_TRU	SIZE.REDUCE			80.40	72.00	60.00	108.00	48.00	69.44	36.00	236.84
RH_TRU	SORT			110.51	88.07	116.82	114.33	86.43	87.93	100.85	287.84

Table A.3-1
Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM											
MISC_SOURCES	FACILITY.RH.IN											
MISC_SOURCES	FACILITY.RH.OUT											
MISC_SOURCES	PACKAGE.FOR.DISPOSAL											
MISC_SOURCES	RECEIVE.FOR.PROCESSING											
MISC_SOURCES	RH.CASK.LOAD.IN											
MISC_SOURCES	RH.CASK.LOAD.OUT											
MISC_SOURCES	SHIP.TO.STORAGE											
RH_LLMW	ENTERING.THE.SYSTEM	6559.70	7167.19	7430.34	7574.30	3148.90	2735.63	2419.13	2688.92	3018.21	2827.36	
RH_LLMW	FACILITY.CH.LLMW.IN	4696.79	4796.37	4828.79	4805.64	4708.06	4683.49	4736.22	4751.24	4750.24	4453.66	
RH_LLMW	FACILITY.CH.LLMW.OUT	1409.79	1360.73	1436.00	1382.04	1663.82	1492.29	1715.56	1586.24	1530.57	1405.14	
RH_LLMW	FACILITY.LLMW.DISPOSAL	1409.79	1360.73	1436.00	1382.04	1663.82	1492.29	1715.56	1586.24	1530.57	1405.14	
RH_LLMW	LLMW.PROCESSING	4696.79	4796.37	4828.79	4805.64	4708.06	4683.49	4736.22	4751.24	4750.24	4473.66	
RH_LLMW	PACKAGE.FOR.DISPOSAL	1409.79	1360.73	1436.00	1382.04	1663.82	1492.29	1715.56	1586.24	1530.57	1405.14	
RH_LLMW	RECEIVE.FOR.PROCESSING	4696.79	4796.37	4828.79	4805.64	4708.06	4683.49	4736.22	4751.24	4750.24	4473.66	
RH_LLMW	REMOVE.CONTAINER	4696.79	4796.37	4828.79	4805.64	4708.06	4683.49	4736.22	4751.24	4750.24	4473.66	
RH_LLMW	RH.CASK.LOAD.IN	4696.79	4796.37	4828.79	4805.64	4708.06	4683.49	4736.22	4751.24	4750.24	4473.66	
RH_LLMW	RH.CASK.LOAD.OUT	1409.79	1360.73	1436.00	1382.04	1663.82	1492.29	1715.56	1586.24	1530.57	1405.14	
RH_LLMW	SHIP.FOR.REUSE	4452.85	4615.28	4589.55	4608.10	4247.64	4365.74	4237.04	4366.57	4413.31	4187.63	
RH_LLMW	SHIP.TO.LLMW.DISPOSAL	1409.79	1360.73	1436.00	1382.04	1663.82	1492.29	1715.56	1586.24	1530.57	1405.14	
RH_LLMW	SIZE.REDUCE	698.20	673.67	711.31	690.27	716.65	745.28	857.55	763.79	757.73	681.75	
RH_LLMW	SORT	704.90	680.36	718.00	691.02	831.91	746.15	857.78	793.12	765.28	702.57	
RH_LLMW	STABILIZATION	704.90	680.36	718.00	691.02	831.91	746.15	857.78	793.12	765.28	702.57	
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66		
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	106.20	106.20	106.20	106.20	106.20	106.20	106.20	106.20	106.20	0.30	
RH_TRU	ASSAY	393.79	632.07	692.34	728.19	806.23	950.53	1240.18	904.01	980.72	551.69	
RH_TRU	ENTERING.THE.SYSTEM	520.76	640.66	643.26	640.66	831.36	793.76	586.36	520.76	518.36	51.00	
RH_TRU	FACILITY.RH.IN	302.46	506.92	596.95	573.35	661.24	782.10	987.79	731.48	770.95	409.52	
RH_TRU	FACILITY.RH.OUT	197.26	316.03	346.17	372.18	409.49	481.26	632.46	465.12	503.11	282.22	
RH_TRU	FACILITY.WIPP	197.26	316.03	346.17	372.18	409.49	481.26	584.46	501.12	491.11	306.22	
RH_TRU	PACKAGE.FOR.TREATMENT	197.26	316.03	346.17	372.18	409.49	481.26	632.46	465.12	503.11	282.22	
RH_TRU	RECEIVE.FOR.PROCESSING	302.46	506.92	576.95	593.35	661.24	782.10	987.79	731.48	770.95	409.52	
RH_TRU	REMOVE.CONTAINER	327.54	526.72	576.95	593.35	661.24	782.10	1012.87	731.48	796.03	449.12	
RH_TRU	RESTRICTED.WASTE.MANAGEMENT	0.74			16.18	12.74	12.00	24.74	26.23	25.49	12.74	
RH_TRU	RH.CASK.LOAD.IN	302.46	506.92	576.95	593.35	661.24	782.10	987.79	731.48	770.95	409.52	
RH_TRU	RH.CASK.LOAD.OUT	197.26	316.03	346.17	372.18	409.49	481.26	632.46	465.12	503.11	282.22	
RH_TRU	SHIP.TO.STORAGE	197.26	316.03	346.17	372.18	409.49	481.26	632.46	465.12	503.11	282.22	
RH_TRU	SIZE.REDUCE	156.63	280.15	288.00	300.51	228.00	306.38	478.77	333.66	394.77	189.45	
RH_TRU	SORT	196.52	316.03	346.17	356.01	396.74	469.26	607.72	438.89	477.62	269.47	

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2025	2026	2027	2028	Total
CS_CAPSULES	RECEIVE.FOR.PROCESSING					2.38
CS_CAPSULES	RH.CASK.LOAD.IN					2.38
CS_CAPSULES	RH.CASK.LOAD.OUT					2.38
CS_CAPSULES	SHIP.TO.STORAGE					2.38
MISC_SOURCES	ENTERING.THE.SYSTEM					15.00
MISC_SOURCES	FACILITY.RH.IN					15.00
MISC_SOURCES	FACILITY.RH.OUT					15.00
MISC_SOURCES	PACKAGE.FOR.DISPOSAL					15.00
MISC_SOURCES	RECEIVE.FOR.PROCESSING					15.00
MISC_SOURCES	RH.CASK.LOAD.IN					15.00
MISC_SOURCES	RH.CASK.LOAD.OUT					15.00
MISC_SOURCES	SHIP.TO.STORAGE					15.00
RH_LLMW	ENTERING.THE.SYSTEM					96759.81
RH_LLMW	FACILITY.CH.LLMW.IN					96759.81
RH_LLMW	FACILITY.CH.LLMW.OUT					33672.27
RH_LLMW	FACILITY.LLMW.DISPOSAL					33672.27
RH_LLMW	LLMW.PROCESSING					96759.81
RH_LLMW	PACKAGE.FOR.DISPOSAL					33672.27
RH_LLMW	RECEIVE.FOR.PROCESSING					96759.81
RH_LLMW	REMOVE.CONTAINER					96759.81
RH_LLMW	RH.CASK.LOAD.IN					96759.81
RH_LLMW	RH.CASK.LOAD.OUT					33672.27
RH_LLMW	SHIP.FOR.REUSE					87747.33
RH_LLMW	SHIP.TO.LLMW.DISPOSAL					33672.27
RH_LLMW	SIZE.REDUCE					14807.95
RH_LLMW	SORT					16836.13
RH_LLMW	STABILIZATION					16836.13
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM					1554.05
RH_LLW_GTCIII	ENTERING.THE.SYSTEM					41035.30
RH_TRU	ASSAY					9866.04
RH_TRU	ENTERING.THE.SYSTEM					7735.87
RH_TRU	FACILITY.RH.IN					7735.87
RH_TRU	FACILITY.RH.OUT					4998.83
RH_TRU	FACILITY.WIPP					4998.83
RH_TRU	PACKAGE.FOR.TREATMENT					4998.83
RH_TRU	RECEIVE.FOR.PROCESSING					7735.87
RH_TRU	REMOVE.CONTAINER					8112.02
RH_TRU	RESTRICTED.WASTE.MANAGEMENT					131.62
RH_TRU	RH.CASK.LOAD.IN					7735.87
RH_TRU	RH.CASK.LOAD.OUT					4998.83
RH_TRU	SHIP.TO.STORAGE					4998.83
RH_TRU	SIZE.REDUCE					3667.01
RH_TRU	SORT					4867.21

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
RH_TRU_SUSPECT	DECON.OVERPACK										
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM							25.33	25.33	25.33	25.33
RH_TRU_SUSPECT	FACILITY.RH.IN										
RH_TRU_SUSPECT	FACILITY.RH.OUT										
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING										
RH_TRU_SUSPECT	RECEIVE.OVERPACK										
RH_TRU_SUSPECT	REMOVE.OVERPACK										
RH_TRU_SUSPECT	RH.CASK.LOAD.IN										
RH_TRU_SUSPECT	SHIP.FOR.REUSE										
RH_TRUM	ASSAY										
RH_TRUM	ENTERING.THE.SYSTEM	448.47	124.40	124.40	167.68	149.59	158.64	167.68	178.68	201.30	205.82
RH_TRUM	FACILITY.RH.IN										
RH_TRUM	FACILITY.RH.OUT										
RH_TRUM	FACILITY.WIPP										
RH_TRUM	PACKAGE.FOR.TREATMENT										
RH_TRUM	RECEIVE.FOR.PROCESSING										
RH_TRUM	REMOVE.CONTAINER										
RH_TRUM	REMOVE.PB.SHIELDING										
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT										
RH_TRUM	RH.CASK.LOAD.IN										
RH_TRUM	RH.CASK.LOAD.OUT										
RH_TRUM	SHIP.FOR.REUSE										
RH_TRUM	SHIP.TO.STORAGE										
RH_TRUM	SIZE.REDUCE										
RH_TRUM	SORT										
SODIUM	ENTERING.THE.SYSTEM										
SR_CAPSULES	ENTERING.THE.SYSTEM	1.12									
SR_CAPSULES	FACILITY.RH.IN										
SR_CAPSULES	FACILITY.RH.OUT										
SR_CAPSULES	PACKAGE.FOR.DISPOSAL										
SR_CAPSULES	RECEIVE.FOR.PROCESSING										
SR_CAPSULES	RH.CASK.LOAD.IN										
SR_CAPSULES	RH.CASK.LOAD.OUT										
SR_CAPSULES	SHIP.TO.STORAGE										
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.02	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04
UNIRRAD_UR	FACILITY.CH.LLMW.IN								36.12	36.12	24.08
UNIRRAD_UR	FACILITY.CH.LLMW.OUT								36.12	36.12	24.08
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL								36.12	36.12	24.08
UNIRRAD_UR	RECEIVE.FOR.PROCESSING								36.12	36.12	24.08
UNIRRAD_UR	SHIP.TO.STORAGE								36.12	36.12	24.08

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
RH_TRU_SUSPECT	DECON.OVERPACK			50.91	50.91	80.40	21.43	83.05	21.43	131.31	50.91
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33
RH_TRU_SUSPECT	FACILITY.RH.IN			75.99	75.99	120.00	31.98	123.96	31.98	195.99	75.99
RH_TRU_SUSPECT	FACILITY.RH.OUT			50.91	50.91	80.40	21.43	83.05	21.43	131.31	50.91
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			75.99	75.99	120.00	31.98	123.96	31.98	195.99	75.99
RH_TRU_SUSPECT	RECEIVE.OVERPACK			75.99	75.99	120.00	31.98	123.96	31.98	195.99	75.99
RH_TRU_SUSPECT	REMOVE.OVERPACK			75.99	75.99	120.00	31.98	123.96	31.98	195.99	75.99
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			75.99	75.99	120.00	31.98	123.96	31.98	195.99	75.99
RH_TRU_SUSPECT	SHIP.FOR.REUSE			50.91	50.91	80.40	21.43	83.05	21.43	131.31	50.91
RH_TRUM	ASSAY			377.12	499.42	519.78	440.60	520.57	529.35	402.30	626.68
RH_TRUM	ENTERING.THE.SYSTEM	4067.41	7736.54	7704.87	366.62	324.75	346.20	444.20	527.55	634.19	1004.52
RH_TRUM	FACILITY.RH.IN			2123.23	2166.85	2108.68	2152.16	2152.98	2203.26	2069.43	1837.54
RH_TRUM	FACILITY.RH.OUT			424.72	545.85	587.10	719.15	632.25	821.17	844.75	934.34
RH_TRUM	FACILITY.WIPP			188.56	252.26	262.44	226.04	260.28	265.95	201.79	311.58
RH_TRUM	PACKAGE.FOR.TREATMENT			188.56	252.26	262.44	226.04	260.28	265.95	201.79	313.98
RH_TRUM	RECEIVE.FOR.PROCESSING			2103.23	2166.85	2108.68	2152.16	2152.98	2203.26	2069.43	1837.54
RH_TRUM	REMOVE.CONTAINER			503.23	646.85	688.68	752.16	731.43	883.26	848.65	1017.54
RH_TRUM	REMOVE.PB.SHIELDING			1600.00	1520.00	1420.00	1400.00	1421.55	1320.00	1220.78	820.00
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT				5.10	5.10	11.48		2.55	1.27	1.27
RH_TRUM	RH.CASK.LOAD.IN			2103.23	2166.85	2108.68	2152.16	2152.98	2203.26	2069.43	1837.54
RH_TRUM	RH.CASK.LOAD.OUT			188.56	252.26	262.44	226.04	260.28	265.95	201.79	313.98
RH_TRUM	SHIP.FOR.REUSE			236.17	293.60	324.66	493.12	371.96	555.22	642.96	620.36
RH_TRUM	SHIP.TO.STORAGE			188.56	252.26	262.44	226.04	260.28	265.95	201.79	313.98
RH_TRUM	SIZE.REDUCE			124.30	203.18	206.90	155.09	224.32	170.54	148.40	302.33
RH_TRUM	SORT			188.56	247.16	257.34	214.56	260.28	263.40	200.52	312.70
SODIUM	ENTERING.THE.SYSTEM					177.00					
SR_CAPSULES	ENTERING.THE.SYSTEM										
SR_CAPSULES	FACILITY.RH.IN										
SR_CAPSULES	FACILITY.RH.OUT										
SR_CAPSULES	PACKAGE.FOR.DISPOSAL										
SR_CAPSULES	RECEIVE.FOR.PROCESSING										
SR_CAPSULES	RH.CASK.LOAD.IN										
SR_CAPSULES	RH.CASK.LOAD.OUT										
SR_CAPSULES	SHIP.TO.STORAGE										
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.04	12.04								
UNIRRAD_UR	FACILITY.CH.LLMW.IN	24.08	24.06								
UNIRRAD_UR	FACILITY.CH.LLMW.OUT	24.08	24.06								
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL	24.08	24.06								
UNIRRAD_UR	RECEIVE.FOR.PROCESSING	24.08	24.06								
UNIRRAD_UR	SHIP.TO.STORAGE	24.08	24.06								

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
RH_TRU_SUSPECT	DECON.OVERPACK	50.91	40.20					50.91		50.91	80.40	
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM	25.33										
RH_TRU_SUSPECT	FACILITY.RH.IN	75.99	60.00				60.00	15.99		75.99	120.00	
RH_TRU_SUSPECT	FACILITY.RH.OUT	50.91	40.20					50.91		50.91	80.40	
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	75.99	60.00					75.99		75.99	120.00	
RH_TRU_SUSPECT	RECEIVE.OVERPACK	75.99	60.00					75.99		75.99	120.00	
RH_TRU_SUSPECT	REMOVE.OVERPACK	75.99	60.00					75.99		75.99	120.00	
RH_TRU_SUSPECT	RH.CASK.LOAD.IN	75.99	60.00					75.99		75.99	120.00	
RH_TRU_SUSPECT	SHIP.FOR.REUSE	50.91	40.20					50.91		50.91	80.40	
RH_TRUM	ASSAY	776.50	667.72	810.58	805.85	818.60	665.25	850.85	720.84	889.29	600.37	
RH_TRUM	ENTERING.THE.SYSTEM	1064.49	1259.17	1281.59	1304.40	673.15	643.61	605.30	641.49	675.27	347.85	
RH_TRUM	FACILITY.RH.IN	1991.60	1804.21	1772.20	1779.96	1725.61	1543.61	1338.82	1646.72	1517.44	1645.52	
RH_TRUM	FACILITY.RH.OUT	1143.77	943.47	1276.03	1188.31	896.38	744.10	888.71	891.71	1089.99	954.65	
RH_TRUM	FACILITY.WIPP	390.65	333.86	405.29	402.92	411.85	332.62	361.11	383.26	454.25	332.06	
RH_TRUM	PACKAGE.FOR.TREATMENT	388.25	333.86	405.29	402.92	411.85	332.62	425.43	360.42	444.64	300.19	
RH_TRUM	RECEIVE.FOR.PROCESSING	1991.60	1804.21	1792.20	1759.96	1725.61	1563.61	1319.74	1645.80	1517.44	1665.52	
RH_TRUM	REMOVE.CONTAINER	1251.61	1044.21	1372.20	1299.96	1065.61	883.61	1079.74	1025.80	1257.44	1023.97	
RH_TRUM	REMOVE.PB.SHIELDING	740.00	760.00	420.00	460.00	660.00	680.00	240.00	620.00	260.00	641.55	
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT					5.10						
RH_TRUM	RH.CASK.LOAD.IN	1991.60	1804.21	1792.20	1759.96	1725.61	1563.61	1319.74	1645.80	1517.44	1665.52	
RH_TRUM	RH.CASK.LOAD.OUT	388.25	333.86	405.29	402.92	411.85	332.62	425.43	360.42	444.64	300.19	
RH_TRUM	SHIP.FOR.REUSE	755.52	609.61	870.74	785.39	484.53	411.48	463.29	531.29	645.34	654.47	
RH_TRUM	SHIP.TO.STORAGE	388.25	333.86	405.29	402.92	411.85	332.62	425.43	360.42	444.64	300.19	
RH_TRUM	SIZE.REDUCE	373.37	303.40	358.70	372.47	355.73	310.70	415.51	338.50	410.73	270.18	
RH_TRUM	SORT	388.25	333.86	405.29	402.92	406.75	332.62	425.43	360.42	444.64	300.19	
SODIUM	ENTERING.THE.SYSTEM											
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.RH.IN					1.12						
SR_CAPSULES	FACILITY.RH.OUT					1.12						
SR_CAPSULES	PACKAGE.FOR.DISPOSAL					1.12						
SR_CAPSULES	RECEIVE.FOR.PROCESSING					1.12						
SR_CAPSULES	RH.CASK.LOAD.IN					1.12						
SR_CAPSULES	RH.CASK.LOAD.OUT					1.12						
SR_CAPSULES	SHIP.TO.STORAGE					1.12						
UNIRRAD_UR	ENTERING.THE.SYSTEM											
UNIRRAD_UR	FACILITY.CH.LLMW.IN											
UNIRRAD_UR	FACILITY.CH.LLMW.OUT											
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL											
UNIRRAD_UR	RECEIVE.FOR.PROCESSING											
UNIRRAD_UR	SHIP.TO.STORAGE											

Table A.3-1

Alternative 2 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2025	2026	2027	2028	Total
RH TRU SUSPECT	DECON.OVERPACK					763.70
RH TRU SUSPECT	ENTERING.THE.SYSTEM					379.95
RH TRU SUSPECT	FACILITY.RH.IN					1139.85
RH TRU SUSPECT	FACILITY.RH.OUT					763.70
RH TRU SUSPECT	RECEIVE.FOR.PROCESSING					1139.85
RH TRU SUSPECT	RECEIVE.OVERPACK					1139.85
RH TRU SUSPECT	REMOVE.OVERPACK					1139.85
RH TRU SUSPECT	RH.CASK.LOAD.IN					1139.85
RH TRU SUSPECT	SHIP.FOR.REUSE					763.70
RH TRUM	ASSAY					11521.66
RH TRUM	ENTERING.THE.SYSTEM					33579.83
RH TRUM	FACILITY.RH.IN					33579.82
RH TRUM	FACILITY.RH.OUT					15526.46
RH TRUM	FACILITY.WIPP					5776.76
RH TRUM	PACKAGE.FOR.TREATMENT					5776.76
RH TRUM	RECEIVE.FOR.PROCESSING					33579.82
RH TRUM	REMOVE.CONTAINER					17375.94
RH TRUM	REMOVE.PB.SHIELDING					16203.88
RH TRUM	RESTRICTED.WASTE.MANAGEMENT					31.87
RH TRUM	RH.CASK.LOAD.IN					33579.82
RH TRUM	RH.CASK.LOAD.OUT					5776.76
RH TRUM	SHIP.FOR.REUSE					9749.70
RH TRUM	SHIP.TO.STORAGE					5776.76
RH TRUM	SIZE.REDUCE					5044.33
RH TRUM	SORT					5744.90
SODIUM	ENTERING.THE.SYSTEM					177.00
SR CAPSULES	ENTERING.THE.SYSTEM					1.12
SR CAPSULES	FACILITY.RH.IN					1.12
SR CAPSULES	FACILITY.RH.OUT					1.12
SR CAPSULES	PACKAGE.FOR.DISPOSAL					1.12
SR CAPSULES	RECEIVE.FOR.PROCESSING					1.12
SR CAPSULES	RH.CASK.LOAD.IN					1.12
SR CAPSULES	RH.CASK.LOAD.OUT					1.12
SR CAPSULES	SHIP.TO.STORAGE					1.12
UNIRRAD UR	ENTERING.THE.SYSTEM					144.46
UNIRRAD UR	FACILITY.CH.LLMW.IN					144.46
UNIRRAD UR	FACILITY.CH.LLMW.OUT					144.46
UNIRRAD UR	PACKAGE.FOR.LLW.DISPOSAL					144.46
UNIRRAD UR	RECEIVE.FOR.PROCESSING					144.46
UNIRRAD UR	SHIP.TO.STORAGE					144.46

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HLW Canister Storage											
STORAGE.RH.DISP	CANISTERS										
Total HLW Canister Storage		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Cs/Sr Capsule and Overpack Storage											
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
STORAGE.RH.DISP	CS_CAPSULES										
STORAGE.RH.DISP	SR_CAPSULES										
Total Cs/Sr Capsule and Overpack Storage		**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**
Miscellaneous RH Sources											
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	MISC_SOURCES										
Total Miscellaneous RH Sources		**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**
Unirradiated Uranium Storage											
STORAGE.RH.PROC	UNIRRAD_UR	12.02	24.06	36.10	48.14	60.18	72.22	84.26	60.18	36.10	24.06
STORAGE.RH.DISP	UNIRRAD_UR								36.12	72.24	96.32
Total Unirradiated Uranium Storage		**12.02**	**24.06**	**36.10**	**48.14**	**60.18**	**72.22**	**84.26**	**96.30**	**108.34**	**120.38**
Remote-Handled LLMW Storage											
STORAGE.RH.PROC	RH_LLMW	1419.55	2746.52	4060.99	5853.46	7319.88	8849.02	10402.89	7718.61	5137.71	2804.23
Total Remote-Handled LLMW Storage		**1419.55**	**2746.52**	**4060.99**	**5853.46**	**7319.88**	**8849.02**	**10402.89**	**7718.61**	**5137.71**	**2804.23**
Remote-Handled GTC3 LLW Storage											
STORAGE.RH.PROC	RH_LLMW_GTCIII	14.20	14.20	14.20	14.20	14.20	14.20	14.20	42.50	70.80	99.10
STORAGE.RH.PROC	RH_LLW_GTCIII	24.30	24.60	24.90	25.20	25.50	25.80	26.10	309.70	1159.90	2576.60
Total Remote-Handled GTC3 LLW Storage		**38.50**	**38.80**	**39.10**	**39.40**	**39.70**	**40.00**	**40.30**	**352.20**	**1230.70**	**2675.70**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2004	2005	2006	2007	2008	2009	2010	2011	2012
HLW Canister Storage										
STORAGE.RH.DISP	CANISTERS							451.00	902.00	1353.00
Total HLW Canister Storage		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**451.00**	**902.00**	**1353.00**
Cs/Sr Capsule and Overpack Storage										
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38							
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
STORAGE.RH.DISP	CS_CAPSULES			2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	SR_CAPSULES									
Total Cs/Sr Capsule and Overpack Storage		**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**
Miscellaneous RH Sources										
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00							
STORAGE.RH.DISP	MISC_SOURCES			15.00	15.00	15.00	15.00	15.00	15.00	15.00
Total Miscellaneous RH Sources		**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**
Unirradiated Uranium Storage										
STORAGE.RH.PROC	UNIRRAD_UR	12.02								
STORAGE.RH.DISP	UNIRRAD_UR	120.40	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total Unirradiated Uranium Storage		**132.42**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**
Remote-Handled LLMW Storage										
STORAGE.RH.PROC	RH_LLMW	1377.41								640.13
Total Remote-Handled LLMW Storage		**1377.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**640.13**
Remote-Handled GTC3 LLW Storage										
STORAGE.RH.PROC	RH_LLMW_GTCIII	184.10	269.10	410.70	552.30	693.90	835.50	892.20	920.50	934.70
STORAGE.RH.PROC	RH_LLW_GTCIII	5126.50	8526.20	13908.90	21274.60	28357.10	34873.00	37139.60	38556.30	39264.80
Total Remote-Handled GTC3 LLW Storage		**5310.60**	**8795.30**	**14319.60**	**21826.90**	**29051.00**	**35708.50**	**38031.80**	**39476.80**	**40199.50**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2013	2014	2015	2016	2017	2018	2019	2020
HLW Canister Storage									
STORAGE.RH.DISP	CANISTERS	1804.00	2255.00	2706.00	3157.00	3608.00	4059.00	4510.00	4961.00
Total HLW Canister Storage		**1804.00**	**2255.00**	**2706.00**	**3157.00**	**3608.00**	**4059.00**	**4510.00**	**4961.00**
Cs/Sr Capsule and Overpack Storage									
STORAGE.RH.PROC	CS_CAPSULES								
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12			
STORAGE.RH.DISP	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	SR_CAPSULES						1.12	1.12	1.12
Total Cs/Sr Capsule and Overpack Storage		**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**
Miscellaneous RH Sources									
STORAGE.RH.PROC	MISC_SOURCES								
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Total Miscellaneous RH Sources		**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**
Unirradiated Uranium Storage									
STORAGE.RH.PROC	UNIRRAD_UR								
STORAGE.RH.DISP	UNIRRAD_UR	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total Unirradiated Uranium Storage		**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**
Remote-Handled LLMW Storage									
STORAGE.RH.PROC	RH_LLMW	1640.81	3503.72	5874.53	8476.09	11244.75	9685.59	7737.73	5420.64
Total Remote-Handled LLMW Storage		**1640.81**	**3503.72**	**5874.53**	**8476.09**	**11244.75**	**9685.59**	**7737.73**	**5420.64**
Remote-Handled GTC3 LLW Storage									
STORAGE.RH.PROC	RH_LLMW_GTCIII	999.16	1060.81	1122.46	1184.12	1245.77	1307.43	1369.09	1430.74
STORAGE.RH.PROC	RH_LLW_GTCIII	40079.20	40185.40	40291.60	40397.80	40504.00	40610.20	40716.40	40822.60
Total Remote-Handled GTC3 LLW Storage		**41078.35**	**41246.21**	**41414.06**	**41581.92**	**41749.78**	**41917.63**	**42085.49**	**42253.34**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2021	2022	2023	2024	2025	2026	2027	2028
HLW Canister Storage									
STORAGE.RH.DISP	CANISTERS	5412.00	5863.00	6314.00	6765.00	7216.00	7667.00	8118.00	8569.00
Total HLW Canister Storage		**5412.00**	**5863.00**	**6314.00**	**6765.00**	**7216.00**	**7667.00**	**8118.00**	**8569.00**
Cs/Sr Capsule and Overpack Storage									
STORAGE.RH.PROC	CS_CAPSULES								
STORAGE.RH.PROC	SR_CAPSULES								
STORAGE.RH.DISP	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total Cs/Sr Capsule and Overpack Storage		**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**	**3.50**
Miscellaneous RH Sources									
STORAGE.RH.PROC	MISC_SOURCES								
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Total Miscellaneous RH Sources		**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**	**15.00**
Unirradiated Uranium Storage									
STORAGE.RH.PROC	UNIRRAD_UR								
STORAGE.RH.DISP	UNIRRAD_UR	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total Unirradiated Uranium Storage		**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**	**144.46**
Remote-Handled LLMW Storage									
STORAGE.RH.PROC	RH_LLMW	3358.32	1626.30						
Total Remote-Handled LLMW Storage		**3358.32**	**1626.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Remote-Handled GTC3 LLW Storage									
STORAGE.RH.PROC	RH_LLMW_GTCIII	1492.39	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05
STORAGE.RH.PROC	RH_LLW_GTCIII	40928.80	41035.00	41035.30	41035.30	41035.30	41035.30	41035.30	41035.30
Total Remote-Handled GTC3 LLW Storage		**42421.19**	**42589.05**	**42589.35**	**42589.35**	**42589.35**	**42589.35**	**42589.35**	**42589.35**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Remote-Handled TRU Storage											
STORAGE.RH.PROC	RH_TRU	1084.19	1187.59	1226.09	1227.79	1254.69	1279.49	1304.29	1305.99	1307.69	1309.39
STORAGE.RH.PROC	RH_TRUM	448.47	572.86	697.26	864.94	1014.53	1173.17	1340.85	1519.53	1720.83	1926.65
STORAGE.RH.DISP	RH_TRU										
STORAGE.RH.DISP	RH_TRUM										
Total Remote-Handled TRU Storage		**1532.66**	**1760.45**	**1923.35**	**2092.73**	**2269.22**	**2452.66**	**2645.14**	**2825.52**	**3028.52**	**3236.04**
Contaminated Sodium Storage											
STORAGE.CH.PROC	SODIUM										
Total Contaminated Sodium Storage		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
New CH Storage Prior to Processing											
STORAGE.CH.PROC	CH_LLMW	725.27	747.17	769.07	790.97	812.88	834.77	856.68	657.45	500.28	460.53
STORAGE.CH.PROC	CH_LLMW_GTCIII	50.20	52.30	54.60	87.50	120.39	214.48	262.67	308.56	446.25	614.52
STORAGE.CH.PROC	CH_LLW_GTCIII								283.30	1133.20	2549.60
STORAGE.CH.PROC	CH_TRU	178.94	317.70	428.51	441.19	453.76	490.80	706.45	713.18	756.91	556.07
STORAGE.CH.PROC	CH_TRUM	0.72	1.12	1.73	1.93	2.08	2.23	6.58	6.89	7.20	1.82
Total New CH Storage Prior to Processing		**955.13**	**1118.30**	**1253.92**	**1321.59**	**1389.10**	**1542.28**	**1832.37**	**1969.39**	**2843.84**	**4182.54**
New CH Storage Prior to Disposal											
STORAGE.CH.DISP	CH_TRU										
STORAGE.CH.DISP	CH_TRUM										
Total New CH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total CH Waste Storage		**955.13**	**1118.30**	**1253.92**	**1321.59**	**1389.10**	**1542.28**	**1832.37**	**1969.39**	**2843.84**	**4182.54**
Grand Total Storage Requirements		**3976.36**	**5706.63**	**7331.96**	**9373.82**	**11096.59**	**12974.69**	**15023.47**	**12980.52**	**12367.61**	**13037.40**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2004	2005	2006	2007	2008	2009	2010	2011	2012
Remote-Handled TRU Storage										
STORAGE.RH.PROC	RH_TRU	1311.09	1312.79	1155.39	1035.39	881.99	703.69	649.14	564.34	511.94
STORAGE.RH.PROC	RH_TRUM	5994.06	13730.60	19312.24	17512.01	15728.08	13922.12	12213.34	10537.63	9102.40
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
Total Remote-Handled TRU Storage		**7305.15**	**15043.39**	**20467.63**	**18547.40**	**16610.07**	**14625.81**	**12862.48**	**11101.97**	**9614.34**
Contaminated Sodium Storage										
STORAGE.CH.PROC	SODIUM					177.00	177.00	177.00	177.00	177.00
Total Contaminated Sodium Storage		**0.00**	**0.00**	**0.00**	**0.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**
New CH Storage Prior to Processing										
STORAGE.CH.PROC	CH_LLMW	382.68	370.70	376.00	355.70	340.85	342.73	332.13	296.50	282.89
STORAGE.CH.PROC	CH_LLMW_GTCIII	793.61	942.10	1147.19	1352.28	1572.67	1793.05	1928.54	2035.63	2113.32
STORAGE.CH.PROC	CH_LLW_GTCIII	5099.20	8498.60	13881.00	21246.40	28328.60	34844.20	37110.50	38526.90	39235.10
STORAGE.CH.PROC	CH_TRU	340.67	178.44	108.70	108.70	36.14				
STORAGE.CH.PROC	CH_TRUM	1.47	1.16							
Total New CH Storage Prior to Processing		**6617.63**	**9991.00**	**15512.89**	**23063.08**	**30278.25**	**36979.98**	**39371.17**	**40859.03**	**41631.30**
New CH Storage Prior to Disposal										
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
Total New CH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total CH Waste Storage		**6617.63**	**9991.00**	**15512.89**	**23063.08**	**30278.25**	**36979.98**	**39371.17**	**40859.03**	**41631.30**
Grand Total Storage Requirements		**20761.70**	**33992.65**	**50463.08**	**63600.34**	**76279.28**	**87654.25**	**91056.42**	**92679.76**	**93778.24**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2013	2014	2015	2016	2017	2018	2019	2020
Remote-Handled TRU Storage									
STORAGE.RH.PROC	RH_TRU	575.85	794.15	927.88	974.19	1041.50	1211.62	1223.27	821.84
STORAGE.RH.PROC	RH_TRUM	8269.38	7342.26	6797.22	6306.61	5831.05	4778.60	3878.60	3145.07
STORAGE.RH.DISP	RH_TRU	9					32.19	77.19	95.19
STORAGE.RH.DISP	RH_TRUM						19.798	25.19	44.976
Total Remote-Handled TRU Storage		**8854.22**	**8136.41**	**7725.11**	**7280.80**	**6872.55**	**6042.20**	**5204.25**	**4107.08**
Contaminated Sodium Storage									
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
Total Contaminated Sodium Storage		**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**
New CH Storage Prior to Processing									
STORAGE.CH.PROC	CH_LLMW	238.98	238.53	178.57	163.92	172.92	174.20	138.92	83.02
STORAGE.CH.PROC	CH_LLMW_GTCIII	2364.79	2613.46	2862.13	3095.50	3328.87	3546.94	3765.02	3967.80
STORAGE.CH.PROC	CH_LLW_GTCIII	40181.71	40420.13	40658.54	40896.95	41135.37	41373.78	41612.19	41850.61
STORAGE.CH.PROC	CH_TRU	420.00	783.69	800.00	743.65	723.65	721.18	735.65	743.65
STORAGE.CH.PROC	CH_TRUM	380.00	757.20	977.30	1077.30	1177.20	1197.30	1214.50	1154.50
Total New CH Storage Prior to Processing		**43585.48**	**44813.00**	**45476.54**	**45977.32**	**46538.01**	**47013.40**	**47466.29**	**47799.58**
New CH Storage Prior to Disposal									
STORAGE.CH.DISP	CH_TRU		10.10						21.39
STORAGE.CH.DISP	CH_TRUM								72.00
Total New CH Storage Prior to Disposal		**0.00**	**10.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**93.39**
Total CH Waste Storage		**43585.48**	**44823.10**	**45476.54**	**45977.32**	**46538.01**	**47013.40**	**47466.29**	**47892.97**
Grand Total Storage Requirements		**97302.83**	**100304.40**	**103536.20**	**106813.08**	**110353.04**	**109057.78**	**107343.71**	**104974.99**

Table A.3-2
Alternative 2 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2021	2022	2023	2024	2025	2026	2027	2028
Remote-Handled TRU Storage									
STORAGE.RH.PROC	RH_TRU	611.12	358.52						
STORAGE.RH.PROC	RH_TRUM	2139.84	1297.67						
STORAGE.RH.DISP	RH_TRU	101.404	85.804						
STORAGE.RH.DISP	RH_TRUM	44.976	65.402						
Total Remote-Handled TRU Storage		**2897.34**	**1807.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Contaminated Sodium Storage									
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
Total Contaminated Sodium Storage		**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**
New CH Storage Prior to Processing									
STORAGE.CH.PROC	CH_LLMW	36.02	9.64						
STORAGE.CH.PROC	CH_LLMW_GTCIII	4170.58	4373.35	4375.65	4375.65	4375.65	4375.65	4375.65	4375.65
STORAGE.CH.PROC	CH_LLW_GTCIII	42089.02	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44
STORAGE.CH.PROC	CH_TRU	751.41	731.41						
STORAGE.CH.PROC	CH_TRUM	1094.50	1131.70						
Total New CH Storage Prior to Processing		**48141.53**	**48573.54**	**46703.09**	**46703.09**	**46703.09**	**46703.09**	**46703.09**	**46703.09**
New CH Storage Prior to Disposal									
STORAGE.CH.DISP	CH_TRU	30.78	42.78						
STORAGE.CH.DISP	CH_TRUM	84.00	120.00						
Total New CH Storage Prior to Disposal		**114.78**	**162.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total CH Waste Storage		**48256.31**	**48736.32**	**46703.09**	**46703.09**	**46703.09**	**46703.09**	**46703.09**	**46703.09**
Grand Total Storage Requirements		**102685.12**	**100962.03**	**95946.40**	**96397.40**	**96848.40**	**97299.40**	**97750.40**	**98201.40**

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SOLID WASTE AND MATERIALS SYSTEMS ALTERNATIVES STUDY

VOLUME III

APPENDIX A.4
Alternative 3 Process Logic

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A.4 PROCESS LOGIC FOR ALTERNATIVE 3

Figure A.4-1 shows the basic flow path each waste stream must follow to reach disposal. To move from this basic process flow diagram to a facility-by-facility analysis, some basic assumptions were made. Basic assumptions used in evaluating waste stream treatment and disposal are presented in this section. Volumes, packaging requirements, and treatment rates are shown; assumptions associated with these activities are identified.

A.4.1 Basic Assumptions for Alternative 3

A.4.1.1 General

- All indicated waste volumes include packaging, except as noted. Interim storage is provided for all treated waste streams through the year 2028 except for those streams going directly to the low-level waste (LLW) burial ground. Interim storage volumes prior to disposal include packaging. The envelope volumes" for storage include space for container/package handling as noted.

- All existing Hanford requirements for waste from packaging are to be met (i.e., weight limitations, free liquid/absorbent limitations and requirements, sharp edges being covered, smearable surface contamination, void space, etc.). Waste contents received for interim storage or processing are assumed to be characterized. Containers received will have inventory sheets and radionuclide/hazardous constituents will be identified on a SDAR or equivalent.

- Process and treatment rates are based on facility operations until the year 2023 with the first three years of start-up at a reduced throughput: 25% of capacity the first year; 50% of capacity the second year; 75% of capacity the third year; and 100% of capacity through the year 2023. Operations are based on a five day work week with 35 actual work weeks per year. As a minimum, material handling equipment will be sized for 125% of design capacity. Some operations such as High-Level Waste (HLW) canister receiving will continue for 19 years, and cesium (Cs) and/or strontium (Sr) capsule overpack placement will be completed in one to two years. The processing of sodium is planned for a two year time frame.

  The estimated annual treatment rates for LLMW and TRU waste are shown in Table A.4-1.

- Overpacking of Cs and Sr capsules is not in the scope of this analysis. Other activities, including the transportation cask loadout at the WESF and the receipt at the interim storage facility, are addressed. All operations will be all remote-handled.

- The Greater Than Category 3 (GTC-3) will be handled remotely. The miscellaneous sources will be handled remotely including cask load-in, packaging, loadout and receipt at the interim storage

facility. Unirradiated uranium will be treated and handled as LLW, with storage provided. The various spent fuel assemblies will be packaged in containers suitable for handling on a contact basis at the interim storage facility.

- Regulatory issues and uncertainties of permitting are addressed in Exhibit 6.6.1-1. The status of each of these issues should be ascertained for each facility identified for processing the waste streams.

A.4.1.2 LLW and Hazardous Only Waste

- All LLW and hazardous only waste in small boxes and drums will be processed and disposed of outside the scope of M-33.

A.4.1.3 TRU

- All CH TRU waste in containers of less than 1.89 m^3 in volume (equivalent to seven 200-liter drums) will be processed at the WRAP-1 facility. This processing is outside this work scope.

- The TRU category of waste has been subdivided into TRU, TRUM, and Suspect TRU. The estimated total RH and CH TRU waste volume is 73,210 m^3. The estimated volume of RH TRU in containers is 41,696 m^3, with 31,514 m^3 as CH TRU. The RH TRU stream includes approximately 9,700 m^3 of Long-Length Contaminated Equipment (LLCE) from the tank farms. It is assumed that the Waste Isolation Pilot Plant (WIPP) will receive a "no-migration" determination to allow disposal of TRUM. Volume estimates are still being refined.

- This analysis excludes pre-1970 buried TRU waste and TRU contaminated soil.

- Processing for RH TRU and CH TRU in large containers will include the following steps for TRUM: (1) Unpacking, assaying, size-reduction, and fixation of RH TRU; and (2) Packaging and assaying to allow shipment to WIPP. Processing steps for CH TRU and Suspect TRU include: Unpacking, assaying, size-reduction, repackaging, and assaying to allow shipment to WRAP-1. Some overpack containers will be decontaminated and recycled. Lead shielding is not utilized for TRU (and LLMW) packaging.

A.4.1.4 LLMW

- All CH LLMW in small containers [less than 6.3 m (1.5 m x 1.5 m x 2.7 m)] will be processed at the WRAP-2A and is outside the M-33 scope.

- Forecast RH LLMW includes equipment from PUREX, B Plant, T Plant, U Plant, and the Tank Farms; it also includes LLCE items more than 20 ft. (6.096 m) long. The LLCE items will be removed from Single-Shell Tanks (SSTs) and Double-Shell Tanks (DSTs) in the Tank Farms. It is assumed there will be approximately 2,000 LLCE items, with a corresponding volume of approximately 87,000 m^3

total, including shipping containers. Indicated total volume for LLCE is assumed to include a void volume of approximately 50%, and an equipment envelope volume of approximately 25%. The current waste stream includes 97,760 m^3 of RH LLMW and 1,630 m^3 of CH LLMW.

- Processing for RH LLMW and CH LLMW in large containers (greater than 576 cu. ft. or 16.31 m^3) will include: (1) Segregation of LLW and LLMW; (2) Size-reduction to fit the appropriate container; (3) Grout or polyethylene extrusion to encapsulate RH LLMW; and (4) Final packaging of LLW and LLMW containers. The LLMW will not be decontaminated to allow further segregation of LLW from the LLMW stream. Size-reduced waste from the CH LLMW stream will be packaged in 55-gal (200-L) drums for storage and shipment to WRAP-2A. Outer shipment containers will be decontaminated and reused.

- Treatment options for LLMW are limited to sorting, disassembly, size-reduction by cutting, grout and polyethylene encapsulation processes, and repackaging. Size-reduction options are limited to existing practices such as saw cutting, shearing, or ultra high-pressure water. The decontamination technologies such as water-wash, electrochemical treatment, and ice- or CO_2 pellet-blast may be added to the system to reduce the LLMW volume, but are not currently considered in the waste processing model, which was adopted for this study. The RH TRU and RH LLMW will be handled remotely in hot cells. The CH TRU and CH LLMW streams will be processed in the same processing line used for RH TRU and RH LLMW, respectively.

- The Clem Report (WHC-SD-ES-303, Rev 0, Westinghouse Hanford Company, November 1994) was used to calculate an average volume per item for the LLCE. The average volume has been determined to be 202 cu. ft. (5.72 m^3) per item, with 2,000 items in the LLCE portion of the RH LLMW stream; actual waste volume is a small percentage of the volume estimate of 87,773 m^3 used in this analysis. Final disposal volume is assumed to be approximately 12,000 m^3 without size-reduction, and significantly less with size-reduction. If the grout facility is used for storage, this is assumed to be final storage with the vaults being filled with grout after each layer of LLCE segments is added.

  Exhibit 6.6.1-2 provides a simple statistical analysis of the LLCE as described in the Titzler report. Based on six standard-size containers for LLCE, the average equipment piece had a volume of approximately 3% of the container volume (which increased from 87,773 m^3 to 102,268 m^3), with a maximum equipment envelope volume of approximately 14.5%.

  Data review indicated a maximum allowable envelope volume per container of approximately 30% of the exterior volume; however the largest equipment item (per container) had an average volume of approximately 18%. The expected hard volume of equipment is close to 7% of the container volume.

A.4.1.5 Greater than Category 3 LLW and LLMW

- Waste classified as Greater Than Category 3 LLW (GTC-3) includes both RH and CH LLMW and LLW. The only requirement for this waste category is interim storage prior to processing and/or disposal.

- The total estimated GTC-3 waste volume is approximately 89,200 m^3, all of which is forecasted. Most of this waste stream is LLW. The GTC-3 waste stream will be in 200-L drums, 4-ft x 4-ft x 8-ft boxes (3.62 m^3), and miscellaneous boxes. The waste stream will begin to accumulate in 1997, although some waste may already be in storage. Storage requirements are assumed to be a Safety Class 3 building, with adequate ventilation and security. Storage of LLMW from the GTC-3 stream must also meet waste segregation and secondary containment requirements of 173-303 WAC. Storage requirements are assumed to be 4-ft x 4-ft x 8-ft boxes (128 cu. ft. or 3.62 m^3) stacked two high for LLW, and 1.5-m x 1.5-m x 2.7-m steel boxes or 200.1 liters for LLMW. The storage facility will allow for 100% excess space for access ways and aisles. The initial storage area is assumed to contain 25,000 boxes. Surface area for each box is assumed to be 2.97 m^2, with a required building floor area of 75,000 m^2.

A.4.1.6 Sr and Cs Capsules

- The WESF fabricated 2,217 Cs and Sr capsules, starting in the late 1970s. Total inventory includes 1,577 Cs and 640 Sr capsules. Some capsules are located at different storage facilities, including Pacific Northwest Laboratories (PNL) and off-site facilities. Capsules not at WESF are being recalled from commercial use after a leaking capsule was detected at an off-site commercial facility. The WESF currently has 1,089 Cs and 635 Sr capsules. To date, 245 Cs and 30 Sr capsules have been cut or destroyed.

- The capsules are made of two concentric tubes that provide double containment of the radioactive CsCl and SrF_2 salt materials. The inner container of the Cs (Sr) capsules are 5.72 cm (2.25 in.) in diameter, 48.39 cm (19.05 in.) in length; and 5.72 cm (2.25 in.) in diameter, 50.10 cm (19.725 in.) in length, respectively. The outer Cs (Sr) containers are 6.67 cm (2.625 in.) in diameter, 51.05 cm (20.10 in.) in length and 6.67 cm (2.625 in.) in diameter, 52.77 cm (20.775 in.) in length respectively. The average, worst-case heat dissipation rate is assumed to be 195 watts for the Sr capsules, and 146 watts for the Cs capsules in the year 2006.

- The 275 capsules that have been cut or destroyed will require packaging for shipment to an interim storage facility or for continued storage at WESF.

- All canisters are to be overpacked if shipment to interim storage is required. The interim storage facility must be capable of

placing the canisters in overpacks that are specially designed canisters designed for heat dissipation, secondary containment, and shipment to an off-site repository.

- It is theoretically possible to dry-store the capsules if the core temperatures are kept below an acceptable threshold. Total heat generation rate of the capsules is approximately 360,000 watts (at the end of year 2005), excluding safety factors. Alternative 3 outlines the use of FMEF as an interim storage location, where the capsules would be housed in storage tubes originally intended for dry storage of high-Pu-content spent fuel. Preliminary calculations indicate that dry storage in these storage tubes at FMEF is feasible with forced-air convection cooling. More detailed information on ranges of heat generation rates of individual capsules (only average values are currently available), and more elaborate heat transfer calculations would be required to verify the cooling capacity in a natural-convection, passive cooling mode (WHC-EP-0616, Rev.0, Westinghouse Hanford Company).

A.4.1.7 HLW Canisters

- The HLW canisters (from vitrification) require storage prior to disposal only. Canister volumes are assumed to be 1.26 m^3 and produced at a rate of 358 per year for a 19 year period. The estimated number of canisters is 6,802. The indicated volume is for canisters only. The LLW vitrified waste canisters are excluded from this analysis.

- The HLW Canisters are assumed to be 686 mm in diameter by 4.57 m in height (2.25 ft. in diameter with an overall height of 15 ft.). Each canister has a weight of approximately 3.35 Tonnes (7,300 lbs). The heat-generation rate is estimated at approximately 77 watts per canister. This estimate was developed in back-of-the-envelope calculations.

- The failed HLW vitrification melters will be disposed of by the Tank Waste Remediation System (TWRS). This waste stream is excluded from this analysis.

A.4.1.8 Miscellaneous Material

A.4.1.8.1 **Contaminated Metallic Sodium.** There are two sources of spent contaminated sodium listed in the current waste inventory. These streams are the Hallam Nuclear Power Facility (HNPF) at 144 m^3 and Sodium Reactor Experiment (SRE) at 33 m^3. The HNPF sodium is being stored in five 15,000-gallon, 56,775 liter tanks at the 2727-W Building. The SRE sodium is being stored in 158, overpacked 55-gal (200 liter) drums at CWC. The sodium has been in storage since 1977 and 1967, respectively. The sodium is being held for future use. The total quantity of sodium is 177 m^3.

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A.4.1.8.2 **Unirradiated Uranium.** The inventory of unirradiated uranium (UU) consists of depleted, natural, and low-enriched material in various forms such as the following:

- Completed fuel assemblies;
- Unfinished fuel assemblies;
- Metal billets and slabs;
- Trioxide powder;
- Dioxide powder and pellets; and
- Thorium oxide.

This material is stored in wooden or metal boxes, 55-gal (200-liter) drums, and T-hoppers. Powder and pellets are stored in cans, pins, assemblies and drums. The material is stored in various Hanford Site locations in the 200 West, 300 and 400 Areas. Some containers and fuel assemblies may have surface contamination. Except for the possible decontamination of external surfaces, treatment is not anticipated for this waste form. Minimum requirements are for consolidation of the IR to a single location and holding for possible sales.

A.4.1.8.3 **Miscellaneous Sources.** This waste stream consists of approximately 15 m^3 of various HLW forms encompassing powders (fines), residues, pellets, pieces of irradiated fuel assemblies/elements and reactor parts, and borosilicate glass canisters. The waste is considered LLW, LLMW and RH TRU (which may be glove box components). These waste forms are stored in various buildings in the 300 Area. Activities associated with this waste form are limited to packaging and interim storage prior to disposal. Table A.4-2 indicates estimated quantities of the miscellaneous sources. Storage volume requirements have not been determined but considering requirements for shielding, the assumed volume increase is by a factor of 4.

A.4.1.9 **Metallic Sodium.** The contaminated metallic sodium will be processed as planned under the current baseline at the 400 Area. The process will convert the waste to sodium sulfate (or sodium carbonate) for disposal as LLW. This new facility will process all of the metallic sodium on site. The processed sodium chemical will be packed in 3.6 m^3 boxes with a weight limitation of approximately 2,260 kg per package. The sodium mass will increase by a factor of 3.1 if the sodium is converted to sodium sulfate and by a factor of 1.96 if converted to sodium carbonate.

A.4.1.10 **Container Sizes.** Specifications for typical containers used for receiving and shipping of waste types are listed in Table A.4-3.

A.4.2 General Characteristics of Waste Streams to be Processed

A.4.2.1 **TRU Characteristics.** The RH and CH TRU contain TRU, TRUM, and Suspect TRU. The Suspect TRU waste to be retrieved may contain up to 50% LLW. The TRUM stream will be processed in the same manner as the other TRU waste and will be stabilized in one of the processing facilities for disposal at the WIPP. Suspect TRU waste will be assayed at the retrieval location. Containers that are found to contain greater than 100 Nanocuries of Pu/gram will be repackaged, if necessary, and sent to the TRU processing facility.

The TRU processing facility will provide the capability for inspecting, assaying, sorting of the container contents, and repackaging TRU.

Part of the forecast RH TRU waste stream is spent ion exchange resin from treating DST farm supernatant. This waste stream is estimated at 2,000 m^3 and is contained in 16,000 m^3 of concrete shielding (large containers). Treatment requirements for this type of waste may be different than just size reduction. The spent resign and concrete shielding represent approximately 40% of the RH TRU feed stream. Approximately 10% of the LLCE is considered RH TRU waste and will be processed as RH TRU. At approximately 10,000 m^3, this stream represents approximately 25% of the total RH TRU feed stream.

The CH TRU Waste Stream to be processed is comprised of all containers other than 55-gal drums. The CH TRU containers will be size-reduced and packaged as LLW after the waste contents have been removed at the processing facility.

A.4.2.2 LLMW Characteristics. The RH and CH LLMW contain both radioactive and hazardous constituents. All LLMW to be processed will have adequate characterization documentation to identify the physical form and relative size of the waste material and the radionuclide and chemical (hazardous) contaminants and quantities present.

The volume of RH LLMW to be processed is 96,760 m^3. Of this volume, approximately 87,000 m^3 is LLCE of more than 6.1 m in length. Most of the LLCE are larger pieces of equipment such as pumps, thermocouples, spargers, etc., which are to be removed from the DSTs and the SSTs in the Tank Farms. There are assumed to be 2,000 individual LLCE items with an average containerized volume of approximately 45 m^3 per item. The 87,000 m^3 total is based on the exterior dimensions of the waste containers. Due to the non-uniform shape of the LLCE items, the actual volume of the items is much less than the shipping container volumes. The actual dimensions of more than 200 LLCE items were used to calculate an average volume per LLCE item. This average volume is 202 cu. ft. (5.72 m^3), which translates into a total volume of 11,486 m^3 for all 2,000 items. The shipping or overpack containers for the RH LLMW will be decontaminated (if needed) and returned to the system after the waste contents have been removed at the processing facility.

The volume of CH LLMW to be processed is 1,630 m^3. The CH LLMW is in containers larger than 1.5 m x 1.5 m x 2.7 m (8.33 m^3) metal boxes. Waste in these containers will be size-reduced (if necessary) and repackaged into 55-gal drums for shipment to, and processing at, the WRAP-2A. The CH LLMW containers received at the RH and large container CH LLMW processing facility are not considered reusable and will be size-reduced and disposed of as LLW.

A.4.3 Processing Operations

A.4.3.1 TRU Processing Operations.

A.4.3.1.1 Processing Facilities Considered. To maintain the scope and cost of facility upgrades and operations at a minimum, only one facility will be used to process both the RH and CH TRU waste. There were several existing

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facilities which were initially determined capable of performing the TRU processing mission and these are evaluated in this report. Two facilities were evaluated in some depth for TRU processing: T Plant and the Maintenance and Storage Facility (MASF). The FMEF was initially considered as a possible TRU processing facility. This option was not deemed viable for two reasons:

(1) The facility layout (compartmentalization and limited crane access) is not easily reconfigured to achieve the required throughput; and

(2) Processing operations by their nature would result in large areas of the facility becoming contaminated, thereby incurring significant decontamination and decommissioning (D&D) costs and precluding future use of the facility for clean operations.

The 300 Area hot cells were also considered initially, but were not pursued because they are configured and sized for processing small quantities of RH wastes, and the upgrades required to the cells, coupled with the cost involved in upgrading a second facility to achieve the required throughput, would be much higher than the conversion of one large facility for all CH and RH operations.

A.4.3.1.2 Processing Logic Overview. The overall TRU processing logic, Figure A.4-1, for both RH and CH TRU waste was based on the process logic diagrams utilized in the PNL model. Figures A.4-2 and A.4-3 provide an overview of the process logic used in RH TRU and CH TRU processing for Alternative 3. As discussed previously, the same facility would be utilized for both RH and CH TRU operations. The same RH processing line would be used for CH operations, except that some steps would be bypassed because the primary purpose of CH processing is to size-reduce and repackage waste in 55-gal drums for shipment to WRAP-1, where final processing would occur.

The RH TRU processing is intended to size-reduce, package in RH canisters and assay the waste for shipment to WIPP. The overpack containers or transportation casks used for shipping the RH TRU to the processing facility will be surveyed, decontaminated if necessary, and returned to the system for reuse. The present waste stream projections do not indicate the presence of lead shielding in the shipping containers; therefore, a separate LLMW processing line is not required.

A.4.3.1.3 Detailed Processing Logic for RH and Large Container CH TRU Waste

A.4.3.1.3.1 Waste Receipts. Waste receipts are estimated at 73,210 m^3 for the project life, and include equipment, debris, void space, and some container volume. To be consistent with the PNL model, 31,715 m^3 of reusable overpacks are considered as part of the receipts, but are not considered part of the TRU treatment requirements.

Receipts include an estimated 48,734 m^3 of RH TRU and 31,514 m^3 of CH TRU. Both waste streams can contain Suspect TRU and Suspect TRUM. Process logic has assumed that the CH/RH TRU processing facility capacity will be sufficient to treat the total waste system.

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The RH TRU receipts may be in any size container ranging from 200-L drums, small boxes, and large containers of up to 1,600 cu. ft. (45 m^3). A complete breakdown of the distribution of container sizes for the waste receipts is not available. Half of the waste is expected in containers of approximately 1,000 cu. ft. (28.3 m^3) or smaller, with the other half expected in containers of approximately 1,600 cu. ft. (45 m^3). Some waste containers may be larger than 45 m^3, but for this analysis, waste in containers larger than 45 m^3 are excluded. An average size container is expected to be 28.3 m^3 (1,000 cu. ft.).

The CH TRU will be received in containers larger than a WRAP-1 Standard Waste Box (SWB), a 67-cu.-ft. (1.9-m^3) container capable of holding up to seven 200-L drums. The largest containers are assumed to be equal to that of the RH TRU. An average size of a CH TRU container is assumed to be 28.3 m^3 (1,000 cu. ft.).

Information is not available as to the volume of the TRU containers or the equipment items in the containers, or if the containers have shielding. Container volume is assumed to be 20% of the incoming receipts requiring processing. To be conservative, the envelope volume of the equipment is assumed to be approximately 30% of the container volume, and the hard equipment volume is assumed to be half of the envelope volume.

Envelope volume is defined as the minimum outline dimension of an equipment item. For example, a pump 10.9 m long, with a 0.33-m flange and 9-in. shaft has an envelope dimension of 0.33 m x 0.33 m x 10.9 m, or approximately 49 cu. ft. Actual hard volume would be approximately 0.566 m^3. Envelope volumes have been used for processing and disposal requirements.

Some CH/RH TRU (Suspect) waste may be sent to the CH/RH LLMW facility for processing as CH/RH LLMW. The volume of this stream could be approximately 5,000 to 15,000 m^3 and would reduce the throughput requirement for the RH TRU and large-container CH TRU processing facility. The Suspect CH TRU waste could be sent directly to the LLW Buried Trench if the waste stream could be analyzed, and determined not to be TRU waste, before shipment to the process facility. Process logic assumes that this waste stream will be processed as TRU within the CH/RH TRU process line. If the waste stream is designated as CH or RH LLMW before it is shipped to the TRU processing facility, or while it is being handled in the TRU processing facility, then shipment to the LLMW processing facility could be an option.

The CH TRU and RH TRU waste streams are assumed to be free of organics and lead.

All waste containers will be received by truck or rail shipments.

The products or output from the RH TRU and Large Container CH TRU treatment facility are:

- Packaged LLW in plywood boxes to the LLW Burial Ground;
- Packaged CH TRU in 200-L drums and SWBs to WRAP-1;
- Packaged RH TRU in canisters to WIPP; and
- Decontaminated overpacks for reuse.

A.4.3.1.3.2 Treatment Options. Treatment options for both RH TRU and CH TRU are shown in Figures A.4-2 and A.4-3. Part of the waste received is a reusable overpack container. If an overpack is received, it will be removed and recycled. The first step in the process is to unload the container. Treatment options are based on the receipt of an average-size container of 28.3 m^3. Annual receipts and treatment are based on 21.5 years of full operation or 69 average containers per year of RH TRU (1,473 containers total), and 52 average containers per year of CH TRU (1,114 containers total). A single RH treatment line is provided for both streams. The two waste streams will be separated during processing and assayed prior to shipment.

(1) Nondestructive Assay. All incoming waste containers will be checked for TRU waste. If a container is found to not contain TRU, the option is available to send containers received as Suspect TRU to the RH and CH LLMW processing facility.

(2) Unpacking. After a container is unpacked, two streams will be processed as follows for an average container of 28.3 m^3:

Container	100% of incoming volume with interior volume of 80%;
Void Space	50% of incoming volume;
Envelope	30% of incoming volume; and
Hard Equipment	Half of incoming envelope volume.

Containers are size-reduced by an approximate factor of 5, and packaged in plywood boxes. With an incoming volume of 28.3 m^3, incoming boxes are size-reduced to a volume of approximately 5.7 m^3, and the pieces are placed in 1.9 boxes, with a volume of 3.6 m^3, each, for shipment to the LLW burial ground. The estimated volume in the box represents a packing efficiency of approximately 85%. The exterior volume of the container will add an additional volume.

(3) Size-Reduction/Separation. The requirement for CH TRU is size-reduction and repackaging for shipment to WRAP-1. The CH waste stream is equipment and debris of various sizes. Equipment items will be size-reduced to fit into 200 liter (200-L) drums or SWBs. For this analysis, the size will be reduced to fit 200-L drums. Maximum length of a segment going into a 200-L drum is approximately 600 to 700 mm. The waste stream is sorted prior to size-reduction; small pieces are removed waste stream and placed into 200-L drums. After size-reduction, volume is expected to be reduced to approximately 6.7 m^3 to 8.5 m^3. The total CH waste stream will be packaged in 200-L drums with an 85% to 90% fill volume and sent to WRAP-1. Based on the incoming container volume, volume reduction is estimated at approximately 70%. Drum packaging efficiency will add an additional 1.5 m^3 to the waste volume for an overall volume reduction of 65%. This will require packaging and assaying of approximately 50 drums per average container.

The requirement for RH TRU is size-reduction and repackaging, stabilization (fixation), and final assay for shipment to WIPP. The waste acceptance criteria for WIPP (WIPP-DOE-069, Rev. 4.0) indicate that all RH TRU will be sent to WIPP in RH casks (see Figure A.4-4 and Exhibit 6.6.1-3). It is assumed that this waste stream will be size-reduced to fit into either a 200-L drum or a WIPP canister. The same rationale applies to this waste stream as to the CH TRU. The cut or size-reduced waste volume from the average container will be approximately 6.5 m^3 to 8.5 m^3. The packaged waste volume will have approximately the same volume increase as CH TRU waste.

(4) Repackaging. Requirements for repackaging have been stated previously. Weight limitations or restrictions on the Pu gram equivalent per container (<325 g for WIPP) may require more extensive repackaging. Packaging requirements are based on the Hanford Site Waste Acceptance Criteria (WHC-EP-0063).

(5) Stabilization. RH TRU will be stabilized by either polyethylene fixation or grout encapsulation. It is expected the packed drums, or containers will be filled with either grout or polyethylene. The additive would fill void space in the containers and could be as high as 20% to 30% of the container volume. A volume increase for fixation is not included in volume estimates.

(6) Estimated average volume reduction--Based on an average container of 28.3 m^3, the estimated volume of waste is:

CH TRU to WRAP-1	6.7 m3 to 8.5 m^3	200-L drums
RH TRU to WIPP	6.7 m^3	200-L drums (or WIPP canisters)
Contingency	2.0 m^3	
Containers	6.9 m^3	Plywood box to LLW Burial Ground

Theoretical volume reduction for the average container is estimated at 4.25 m^3. This analysis estimates a volume reduction to approximately 8 m^3 to 10 m^3, or approximately a 65% to 75% reduction in volume, including overpack. This volume reduction excludes reusable overpacks and LLW going to the LLW Burial Ground. Storage volume will increase, allowing for container and handling requirements.

A.4.3.2 LLMW Processing Operations

A.4.3.2.1 Processing Facilities Considered. As in the case of TRU processing, both RH and CH processing operations will be performed in one facility. The RH and CH processing were combined to limit project cost to the upgrades and operation of one facility, rather than two separate facilities. This approach is also justified by the fact that the CH LLMW volume of 1,630 m^3 is small in comparison to the volume of RH LLMW of 96,760 m^3.

The facilities evaluated in this report for LLMW processing under Alternative 3 are the T Plant, MASF, and the Grout Vaults. The FMEF and 300 Area hot cells were not considered viable because the size and configuration of these facilities would not allow handling of LLCE. Modifications to the FMEF hot cell facility to handle only the non-LLCE were considered not to be cost-effective.

A.4.3.2.2 **Processing Logic Overview.** The RH LLMW processing will involve unpackaging, verification of waste forms, initial size-reduction of waste forms, further size-reduction if necessary, and stabilization/encapsulation. The CH LLMW will be size-reduced to fit into 200-L drums and packaged for shipment to the WRAP-2A. Processing of the CH LLMW in drums will be performed at the WRAP-2A. Figures A.4-5 and A.4-6 provide the detailed process logic for RH and CH LLMW process for the MASF and T Plant.

The process logic for the Grout Vault Facility is simplified by the elimination of stabilization/encapsulation of individual waste containers and repackaging for shipment for the LLCE waste stream. In the Grout Vault option, LLCE items will be size-reduced and placed directly into a disposal vault. The disposal vault would be filled to a predetermined depth (approximately 1 m) and a grout mixture would be added to fill voids and to act as an encapsulation medium. The detailed process logic for use of the Grout Vault Facility for LLMW processing and disposal is provided in Figure A.4-7.

A.4.3.2.3 Detailed Process Logic for RH and CH LLMW.

A.4.3.2.3.1 Waste Receipts. Waste receipts are estimated at a total of 111,192 m^3 for the life of the project, and includes both equipment\waste and container volume. LLCE will be transported in containers with an estimated total volume of approximately 87,773 m^3. This volume is assumed to contain approximately 2,000 equipment pieces. This waste stream is assumed to be RH and represents approximately 90% of the total RH LLMW volume. LLCE is defined as having a length of over 20 ft (6.1 m). The waste stream includes approximately 9,000 m^3 of other RH waste.

The overall waste volume includes 1,630 m^3 of CH waste in large containers. A large container is defined as having a volume of greater than 500 ft^3 (14.16 m^3). The total RH LLMW stream is considered to be LLCE from the Tank Farms and non-LLCE contaminated equipment coming from the Tank Farms and some of the canyon facilities in the 200 Area. The RH and CH LLMW stream is assumed to be all equipment with little or no contained organic matter. The organic content of the waste stream is still being defined.

The LLCE will be shipped to the treatment facility in containers with an average size of approximately 45 m^3. Estimated volume of the equipment inside the container is assumed to have an outline envelope (maximum diameter squared time length) volume of 402 ft^3 (11.4 m^3), with an actual volume of 202 ft^3 (5.7 m^3). The Westinghouse Hanford Company supporting documents, WHC-SD-WM-ES-303, and WHC-SD-WM-ES-265 were used as source documents for volume estimates. Container size can be as large as 71 ft long x 8 ft x 8 ft, with a volume of 4,550 ft^3, (21.6 m x 2.44 m^2, a volume of 128.9 m^3). An average

container is assumed to have the approximate dimensions of 8 ft x 10 ft x 20 ft, with a volume of 1,600 ft^3, (2.44 m x 3.1 m x 6.1 m or 45 m^3). The actual volume of the LLCE items is assumed to be approximately 13% of the total shipping volume.

The remaining 9,000 m^3 of RH LLMW will be received at the facility in containers of almost any size and configuration, from 55-gal (200-L) drums to 6.3-m-long containers.

Some CH or RH TRU (Suspect) waste may be rerouted to the LLMW facility for processing as CH or RH LLMW. The anticipated volume of this stream could add an additional 5,000 to 15,000 m^3 to the overall feed requirement. As this waste stream may be relatively small, there may not be an impact on the RH LLMW to be processed.

The CH LLMW will be received in containers of larger than 14.16 m^3 with a configuration of approximately 5 ft x 10 ft x 10 ft (500 ft^3 or 14.16 m^3) to 8 ft x 10 ft x 20 ft (1,600 ft^3 or 45 m^3), with an average container size of 6 ft x 8 ft x 12 ft (576 ft^3 or 16.3 m^3). The estimated volume of CH LLMW represents approximately 2% of the total LLMW stream. This waste stream will be handled as RH because of the small volume.

All waste containers will be received by truck or rail shipment. If T Plant is used, rail shipments will also be accepted. Containers are considered metallic or metallic lined with concrete shielding. The containers are assumed to be lead free, and the container volume is assumed to be approximately 20% of the incoming volume. Some containers will be 55-gal (200-L) drums.

A.4.3.2.3.2 Treatment Options. Treatment options for both RH LLMW and CH LLMW are depicted in Figures A.4-5 and A.4-6. Waste is received in containers and the first step in the process is to unload the container. Treatment options are based on the receipt of an average size container of 45 m^3. The facility will process an average at 4,867 m^3/Yr. for 21.5 years. The number of containers is expected to be approximately 112 containers per year.

(1) Unpacking and Container Handling--After the container is unpacked, two streams will be processed as follows for an average container of 45 m^3:

Container	100% of incoming volume with interior volume of 80%;
Void Space	50% of incoming volume;
Envelope	30% of incoming volume; and
Hard Equipment	Half of incoming envelope volume.

Containers are size-reduced by an approximate factor of 5, and packaged in plywood boxes. With an incoming volume of 45 m^3, incoming boxes are size-reduced to a volume of approximately 9 m^3, and the pieces are placed in 3.5 boxes, with a volume of 3.6 m^3, each, for shipment to the LLW burial ground. The estimated volume in the box represents a packing efficiency of approximately 70%.

An 80% packing efficiency was used for this analysis. The exterior volume of the container will add an additional volume.

The resultant disposal volume of the shredded containers is expected to be 9.8 m^3 to 15 m^3 on the average, for each incoming container requiring disposal (see Table A.4-4). Interim storage is not provided for the waste stream destined for the LLW Burial Ground. Reusable containers from the LLCE overpacks will be surveyed, decontaminated if necessary, and returned to the system for reuse. Figures A.4-8 and A.4-9 indicate typical container dimensions and the cutting plan for volume reduction.

The basic premise for Alternative 3 is that the shipping containers for LLCE are reusable and are recycled. This premise, based on the information provided in the Titzler report, results in a departure from the PNL model used for Alternatives 1 and 2. It is assumed that the LLCE will be packaged in a "flexible receiver" inner liner. For the most part, the shipping container will remain free of contamination.

(2) Size-Reduction/Separation - The second waste stream is equipment and debris of various sizes. In the case of the Grout Vaults, size-reduction of RH LLMW is performed to obtain segments not longer than approximately 3 m, with a weight of less than 2,000 kg. For T Plant or MASF, the pieces will be size-reduced to fit into either 200- L drums or a High-Integrity Container (HIC) with a volume of 8.3 m^3. The T Plant and MASF will size-reduce to less than 3 ft (1 m) to use a conveying/container system for remote handling. Waste that is containerized will be packed to 85% to 90% full. Maximum length of a segment going into a HIC is 2.4 m, and the width is less than 1.2 m.

Prior to size-reduction, the waste stream is sorted. Approximately 5% of the waste stream does not require size-reduction, and is removed and sent directly to the stabilization area. The volume of this stream is estimated at 0.54 m^3. The remaining waste stream is size-reduced. After size-reduction, the total volume is expected to be reduced by approximately 50% or 11.1 m^3, and includes approximately 50% void space. This sorting step may not be required.

(3) Repackaging and Stabilization (Encapsulation) - Size-reduced waste segments from the RH LLMW stream are placed into a HIC at an 85%- to 90%-full level. Considering a net packing volume of the cut pieces, the estimated 5.5 to 11 m^3 of the size-reduced equipment segments will fill approximately 1.6 containers or approximately 13 m^3. The effective packing density is expected to be close to 50%, with the reduced envelope volume allowing a degree of nesting. Envelope volumes have been used for estimating processing and disposal requirements.

The expected volume reduction of incoming RH LLMW is estimated to be approximately 70% to 75%, based on packaging the waste in HICs.

Waste from the RH LLMW stream placed in a HIC will be stabilized by adding a grout mix to the container. The grout will fill the void space between the placed segments. This void space is estimated to be approximately 40% to 50%.

Size-reduced waste segments from the CH LLMW stream will be packaged in 200-liter drums for shipment to WRAP-2A. The PNL model used in this study does not allow for stabilization and packaging for final disposal of the CH stream within the same facility as the RH stream. Given the small quantity of CH LLMW in large containers, it would likely be more cost effective to stabilize and dispose of the size-reduced CH LLMW in the same facility where the RH LLMW stream is being processed. This may also be true for Alternatives 1, 2, and 4 where a common facility is used for processing the RH LLMW and size-reducing the CH LLMW in large containers.

(4) Estimated Average Volume Reduction - Based on an average container

high-pressure water blast units, plasma arc units, and acetylene torches could improve size-reduction capacity and performance but were not included in the cost estimates for Alternative 3. The use of laser technology should also be evaluated and considered if any of the Alternative 3 options proceed to conceptual design.

Shredding equipment will also be required. Some size-reduction will be required ahead of shredding, as it is unlikely that large equipment items can be fed to a shredder. Shredders are only considered for containers and shipping packages. Steel drums can be shredded with minimum difficulty, but, the number of drums to be shredded is probably insignificant.

A.4.4 Storage Operations

A.4.4.1 Waste Material Requiring Storage. The storage operations considered within the scope of this report include storage prior to processing, and storage prior to off-site disposal. The pre- and post-processing storage functional requirements, with the exception of the space required are identical. Therefore, it has been assumed that both the pre- and post-processing storage functions of the same waste streams materials would be performed in the same facility (facilities). The waste volumes required storage depend on the forecasted generation rates over time provided by the on-site waste generator facilities and the operational schedule and throughput of the processing facilities. The waste volume forecasts used in this study were assumed to be fixed. For Alternative 3, the processing throughput requirements were determined by dividing the entire forecasted waste volume, plus current inventory, by the operational period, in years. The operational period is assumed to end in the year 2023 and begins when the processing facility construction and startup activities have been completed (assumed to be in the year 2001). The throughputs and the operational schedules of the processing facilities were input into the PNL model. The model was then run to calculate the storage volume requirements for each waste stream for each year out to 2023. These storage volumes are summarized in Table A.4-6. The fourth column, indicated as Package Year, represents the year in which the maximum storage requirements must be provided.

The two treatment scenarios are: (1) RH and CH TRU are processed in the same facility on two completely independent treatment lines; and (2) RH and CH TRU are processed in one facility in a commingled process line (RH and CH TRU are interchangeable to accommodate projected surges in either stream).

Option one identifies storage of the pre- and post-treated TRU in separate facilities, assuming a commingling process scenario. This process scenario would allow for the leveled process rate of 3,400 m^3 each year to the year 2023, including a three-year period to ramp-up to a full productivity rate. A pre-treatment storage facility would be constructed as soon as practicable, and would be sized to accommodate the maximum pre-treatment waste stream projection of 20,000 m^3, which is in the year 2006. A processing facility would accept pre-treated waste from this facility, process/treat and

Current projections indicate that the first of three post-treatment storage facilities must be constructed and operable by the year 2001 to store the first 16,000 m^3 of waste; the second facility would be in operation by the year 2008 to store an additional 16,000 m^3; and the third facility would be completed and in operation by the year 2015 to provide the remaining storage of the 48,000 m^3 of processed RH and CH TRU. The last projected pre-treatment stream is projected for the year 2023 and the pre-treatment storage facility will be nearing the end of it's 30-year design life-cycle expectancy. This report finds that, as a contingency, the facility should be maintained for the potential of additional, as yet unknown, pre- or post-processing storage requirements. After completion of processing, all known RH and CH TRU, the facility may be decommissioned.

The two additional storage options for the same commingled process logic are post-process storage in a single structure, or complete elimination of post-process storage. A single-storage facility would require administrative controls for the separation of RH and CH waste. The facility would require dual design parameters for CH and RH material requirements. Additionally, the large facility would require a one-time large construction budget to design and construct a facility to store 48,000 m^3 of RH and CH TRU. Operating costs throughout the facility life-cycle would be higher for this option because the entire facility would come on-line and require maintenance and operation costs for the entire processing operations duration. This is unlike the option for multiple smaller storage facilities, which would require a smaller staff for maintenance; and once the small storage facility were filled to capacity, operations would be eliminated, with exception to scheduled surveillance of the stored materials.

Storage after processing could be eliminated if CH and RH TRU were shipped directly to final disposal. If this were possible, a 90-day storage area, with comparatively small storage area requirements, would be required for storage prior to shipping to final disposal.

Option two for processing assumes a completely segregated process line for RH and CH TRU in the same facility. This process logic would require a slower start-up process rate and would peak at approximately 4000 m^3 in the year 2013. This is a 15% increase in process capacity compared to the commingled process facility. Storage prior to processing is approximately 16,500 m^3 for a segregated facility, which is 18% less than a commingled process facility. The post-treatment storage requirements are the same for both options.

Storage options for both processing scenarios would hold true, with the exception that storage facility sizes for pre-processing may differ.

Spent nuclear fuel, Sr and Cs capsules, unirradiated uranium, miscellaneous sources, and HLW canisters will also require storage prior to off-site disposal. These waste streams are assumed to be stored on-site until the year 2028. Exhibit 6.6.1-4 provides the dimensions, characteristics, and storage requirements for each of the waste stream containers.

Required storage space for pre- and post-processing storage in any given year is a function of the waste generations and processing rates for the

present and prior years. The maximum volume of waste to be stored occurs in the year 2023 with storage continuing through the year 2028. All GTC-3 waste will require storage at this time. Total volume to be stored is 3,150,000 cu. ft. (89,200 m^3) Of this, 1,540,000 cu. ft. (43,600 m^3) is RH and 1,680,000 cu. ft. (47,700 m^3) is CH.

The storage space can be calculated, in square feet, from the waste volumes if the container types are known. For this summary, all CH wastes were assumed to be in 55-gal (200-liter) drums, and all RH wastes were assumed to be in 5-ft. x 5-ft. x 9-ft. (1.5-m x 1.5-m x 2.7-m) metal boxes. Drums are stacked three high, and metal boxes are stacked two high, with a 3-ft. aisle between rows, as required by WAC 173-303. The calculated storage areas are then 545,000 sq. ft. (50,641 m^2) for CH wastes, and 212,000 sq. ft.(19,674 m^2) for RH wastes. The CWC Phases I through V provide 280,000 sq. ft. (26,022 m^2) of CH waste storage space, thus reducing the new construction CH storage space requirements to 265,000 sq. ft. (24,618 m^2). All RH storage space must be provided by new construction.

Construction costs for storage space are approximately $70 per sq. ft. for CH waste. Adding in the costs for design, construction management, and project management, the average total project costs are approximately $207 per sq. ft. for CH waste storage, and $1,283 per sq. ft. for RH waste storage. Total new construction costs for future CWC expansion are projected to be $55 million for CH storage, and $272 million for RH storage. The costs for CWC Phase V, $26 Million, should be added to these totals. Table 6.6.1-7 shows the estimated costs for CH and RH storage facilities.

A.4.4.1.1 RH TRU Storage. The TRU waste will be processed at either T Plant or the MASF under Alternative 3. Some TRU waste will require storage prior to processing at the selected facility, as well as storage prior to off-site disposal for the processed CH/RH TRU, and TRU waste. To minimize overall storage costs, all TRU storage would be consolidated into two facilities or storage complexes: one for RH TRU, and one for CH TRU. Storage of RH TRU requires shielded cells or storage areas and remote-handling equipment and monitoring systems. Additionally, storage areas must be clean (free of radioactive contamination) to allow shipment out of storage without having to decontaminate the containers. No existing facility meets all criteria for storage of the projected volumes of RH TRU.

A.4.4.1.2 RH LLMW Storage. There were three options that were considered viable for processing RH LLMW and large containers of CH LLMW under Alternative 3. The T Plant, MASF, and Grout Vaults could be modified to perform these operations at the required throughput. If T Plant or MASF were used for LLMW processing, then some surge storage capacity would be necessary because of the limited throughput of these facilities. It may be possible to achieve sufficient throughput at the Grout Vaults to preclude the need for surge storage capacity. Preparation of detailed Time Motion Studies for each facility processing option to accurately predict the maximum possible throughputs was considered outside this scope of this study. It does seem possible that with fewer processing steps required under the Grout Vault option, the LLCE items could be disposed of as they are generated. Because the LLCE items comprise the large majority of the LLMW waste stream, it may be possible to eliminate the need for pre-processing storage, at least for RH

LLMW, by using the Grout Vaults for LLMW processing. Because of the large volume of RH LLMW (12,000 m^3) waste requiring storage prior to processing, there is not enough floor space available in any one existing facility to provide storage for RH LLMW. This report does, however, provide a discussion of the RH LLMW storage issue and the available storage space in the FMEF. No other radiologically-clean facilities have adequate secondary containment, shielded cells, and remote-handling capabilities to store RH LLMW.

A.4.4.1.3 CH TRU and LLMW Storage. A detailed study of storage options for CH LLMW have been performed (Evaluation of Existing Hanford Buildings for the Storage of Solid Wastes, WHC-EP-0636). The conclusions from this study are that storage of RCRA waste in compliance with the Washington State Dangerous Waste Regulations (173-303 WAC), cannot be done in a cost-effective manner by converting any existing facility to such use. Based on this study, it was not considered worthwhile to pursue storage of CH TRU, LLMW, and Greater Than Category 3 LLW in any existing facility. This report does, however, consider storage of RH TRU and LLMW in existing facilities (the FMEF). To the extent that the requirements for storage of CH waste are less restrictive than for RH waste, any facility capable of storing RH could also be used for CH storage as well.

A.4.4.1.4 Greater Than Category III (GTC-3) Waste Storage. The large volumes of wastes projected for RH and CH GTC-3 wastes dictate the long-term storage needs for RH and CH waste storage. All RH and CH TRU and LLMW is planned to be processed and disposed of by the year 2023. Because there are no treatment or disposal standards for the GTC-3 wastes, all wastes that are generated up to the year 2023 (the planned end date for treatment and storage functions) must be stored. The projected volumes are 42,589 m^3 for RH GTC-3 wastes and 46,703 m^3 for CH GTC-3 wastes.

A.4.4.1.5 Strontium and Cesium Capsule Storage. This report evaluates various options for interim storage of all capsules (1,577 Cs and 640 Sr) prior to final disposal. On-site processing of the capsules through the HWVP is currently being evaluated as part of the TWRS and is not addressed herein. Actual capsule storage space allocations depends on the method (dry storage in casks at a new facility, dry storage in existing storage tubes at the FMEF, or wet storage at WESF) chosen for storage (see Exhibit 6.6.1-5).

Studies provided for the compilation of this report indicate that dry storage is a viable option for long-term storage. Detailed computations for the option described in Section 6.6.2.8 (FMEF) would be required for further evaluating the safe operating parameters anticipated. Information provided by WESF was used to develop heat load requirements, monitoring equipment and inspection criteria. This report suggests a further detailed analysis of the FMEF Dry Storage option.

A.4.4.1.6 High-Level Waste (HLW) Canister Storage. Interim storage of the HLW canisters was considered in this study. Storage of waste canisters produced by the Low-Level Waste Vitrification Plant(s) was considered out of scope.

The estimate of 6,802 canisters is based on a volume of 8,569 m^3, as developed in the TPA M-33 Milestone inventory volume (revised February 17,

1995). Generation of HLW in canisters is to begin in 2010 and proceed for 19 years at a rate of 451 m^3 per year (358 canisters). Heat dissipation is an important consideration for HLW canister storage. All approaches considered for interim storage require forced-circulation dry cooling (see Exhibit 6.6.1-6).

The 1990 ICF Kaiser Hanford Company study evaluated storage options for 2,000 smaller canisters, which were projected at that time. This study indicated that the storage facilities must meet Safety Class 2 requirements. The storage concept for 221-U and the PUREX involved forced-air cooling, with the canisters stored in racks of nine. The racks had a floor surface area of approximately 2.44 m x 2.44 m (5.95 m^2) or 8 feet x 8 feet (64 sq. ft.). The bottom of the racks were approximately 1 m off the floor to allow for cooling air circulation. The suggested storage area for the larger canisters is approximately 2.74 m x 2.74 m (7.51 m^2) or 9 feet x 9 feet (81 sq. ft.). The storage racks would have a height of at least 5.2 m (approximately 17 to 18 ft.). By taking the estimated number of canisters and dividing it by the number of canisters per rack, a special requirement for storage of 5.691 m^2 is calculated. This area is then multiplied by the height of the canisters, 1.6 m^2, and added to the estimated area required for handling to calculate the total area required for HLWC storage.

A.4.4.1.7 Storage of Unirradiated Uranium. Interim storage of unirradiated uranium (UU) was also considered under Alternative 3. The volumes and container types for the UU are provided in Section 6.6.2.9. The UU inventory is currently for sale and storage area requirements depend on the amount, if any, of UU that is delivered offsite. Section 6.6.2.9.1 discusses the requirements for storage with and without the pending sale going through.

A.4.4.1.8 Storage of Miscellaneous Sources. Section 6.6.1.1.8.3 provides a detailed discussion of the types and quantities of miscellaneous sources that will require continued storage. This information is summarized in Section 6.6.1.1.8.3, and Table 6.6.1-2 lists the seven different types of waste included within the miscellaneous sources category, amounts in volumes and/or masses, and current storage locations, mainly storage cells in Buildings 324, 325 and 327. The total volume of the waste is estimated to be 60 m^3. This is a relatively small amount; however, some items are highly radioactive (up to 100,000 R/hr) and the present storage locations are not considered suitable for long-term storage.

The storage requirements for the miscellaneous sources will be as demanding as those for RH TRU some of the miscellaneous sources volume. Actual storage volume required for the 15 m^3 is expected to be 60 m^3, assuming a factor of 4 increase in volume due to shielding and packaging requirements for storage. The only existing facility that satisfies all of the expected technical criteria would be the FMEF.

A.4.4.2 Facilities Considered for Storage Operations Under Alternative 3.

A.4.4.2.1 Storage of RH TRU and RH LLMW. There are no existing facilities that can be modified to contain the projected maximum storage quantities of RH TRU and RH LLMW. The only existing, radiologically clean facility, with RH capability and shielded cells, that could meeting Hazard

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Category 2 requirements, is the FMEF. For this reason, the FMEF was evaluated for the interim storage of the RH TRU and LLMW streams, and was found to have inadequate storage volume available. Interim storage of RH TRU and RH LLMW, prior to processing, require 20,000 m^3, and 12,000 m^3 of storage space, respectively. The volume of the shielded cells, which are available in the FMEF, is 3,300 m^3. The projected volume of RH wastes could be reduced to less than 3,300 m^3, and it would be possible to modify the FMEF for RH storage.

A.4.4.2.2 Storage of CH TRU and CH LLMW. There are no existing facilities that can be modified to contain the projected maximum storage quantities of CH TRU and CH LLMW. The FMEF and the 2101-M warehouse were evaluated in much the same manner as the evaluation for storage of RH TRU and RH LLMW. The FMEF was found to have inadequate space and the compartmental configuration of the facility would require extensive modifications for the storage of large volumes of waste. The WHC report, Evaluation of Existing Hanford Buildings for the Storage of Solid Waste, concluded that modifications to bring 2101-M into regulatory compliance would cost $108/sq. ft., compared to $58/sq. ft., for a new facility specifically designed to store these waste streams. The conclusion of the Alternative 3 Evaluation is that construction of a new storage facility (i.e., new storage building at the Central Waste Complex) is more cost-effective and poses less risk than converting any existing facility to store large volumes of CH TRU or CH LLMW.

A.4.4.2.3 Storage of Greater than Category 3 Waste. There are no existing facilities that can be modified to store the projected maximum storage quantities of 89,200 m^3 for GTC 3 waste. The same evaluation criteria and conclusions derived for storage of CH TRU and CH LLMW in existing facilities apply to storage of the CH GTC-3 waste. Similarly, the only existing facility sited for storage of the RH GTC-3-- the FMEF--does not have adequate capacity. The construction of a new facility is the most cost effective and logistically feasible alternative for the large volumes of the RH and CH GTC-3 waste stream.

A.4.4.2.4 Storage of Sr and Cs Capsules. Dry storage of the Sr and Cs is the preferred option as outlined in the HDW-EIS (DOE 1987) and the Hanford Waste Management Plan (DOE-RL 1987) reports. The WHC-EP-0616 report, Cesium and Strontium Capsule Disposal, further identifies options for ultimate disposal of the capsules. The two primary considerations in this report are the blending of the capsule contents, SrF_2 and CsCl, into the HWVP waste stream or, overpackaging and transfer to dry storage. The dry storage option is a technically feasible and is contained in this report. Processing of the capsules as part of the HWVP waste stream was not within the scope of the M-33 Study.

Use of the FMEF for the dry storage of the Sr and Cs capsules appears to be a viable option. The FMEF was constructed as a safety class one nuclear facility and could be modified for the dry storage of Cs and Sr capsules. The Fuel Assembly Area (FAA) currently contains a below grade storage vault with 301 storage locations which were specifically designed for the storage of high exposure Pu fuel assemblies. This option could be executed at a lower cost than upgrading WESF or constructing a new facility (see Cost Data Section 6.6.3, Alternative 3 and 6.8.3 of Alternative 5).

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A.4.4.2.5 Storage of HLW Canisters. Modular Vault Dry Storage (MVDS) for high-level waste canisters was proposed in an engineering study by ICF Kaiser Hanford Company in 1990. The proposed facility is an approved storage method for remote handled materials on U.S. Department of Energy Sites. Other options that have been evaluated for storage are the conversion of canyon facilities such as U Plant, B Plant and PUREX; and modification of the large cells in the FMEF (see Section 6.6.1.4.1.6). The current projected waste stream of 6,802 waste canisters will not fit in FMEF. The use of canyon facilities would require conversion of three canyon facilities (U Plant, B Plant and PUREX) to provide adequate storage. This option is discussed in Section 6.6.2.10. Projected costs for a MVDS is approximately $100 million and is discussed further in Section 6.8 for Alternative 5.

If the canyon decks were to be used for storage of the 6,802 HLW canisters, the available deck area from one canyon (approximately 2,400 m^2) is not sufficient for storage of all HLW canisters. The usable floor area should be capable of storing approximately 150 to 200 storage racks, with nine canisters per rack. The required storage area is approximately 5,700 m^2 plus space for handling. Therefore, three canyon facilities would be required to store all of the projected HLW canisters. The upgrades to the canyon facilities for shielding and heat removal are significant factors in the cost estimates for this option.

A.4.4.2.6 Storage of Unirradiated Uranium and Miscellaneous Sources. Unirradiated uranium and miscellaneous sources are currently located at a number of facilities. The routine maintenance and surveillance costs associated with storage of these materials at different locations was thought to be high in comparison to the costs involved in consolidated storage at one facility. For this reason consolidation and storage at one facility was considered under Alternative 3. The FMEF, which was designed as a Hazard Category I facility, was specifically considered because of the size of the facility, more than adequate safeguards and security systems, and construction to meet very high load limits. However, there are likely many other facilities on the Hanford Site, which could also perform this function. A thorough evaluation of all possible siting locations for consolidated storage was not performed in this study. The overall conclusion to be drawn from the evaluation done for the FMEF is that consolidated storage of these materials is a cost-effective option that could be executed with very little in the way of facility modifications. This same conclusion could also be reached for other facilities with adequate floor-loading limits, physical confinement, and safeguards and security protection.

Figure A.4-1. Alternative 3 Flow Schematic.

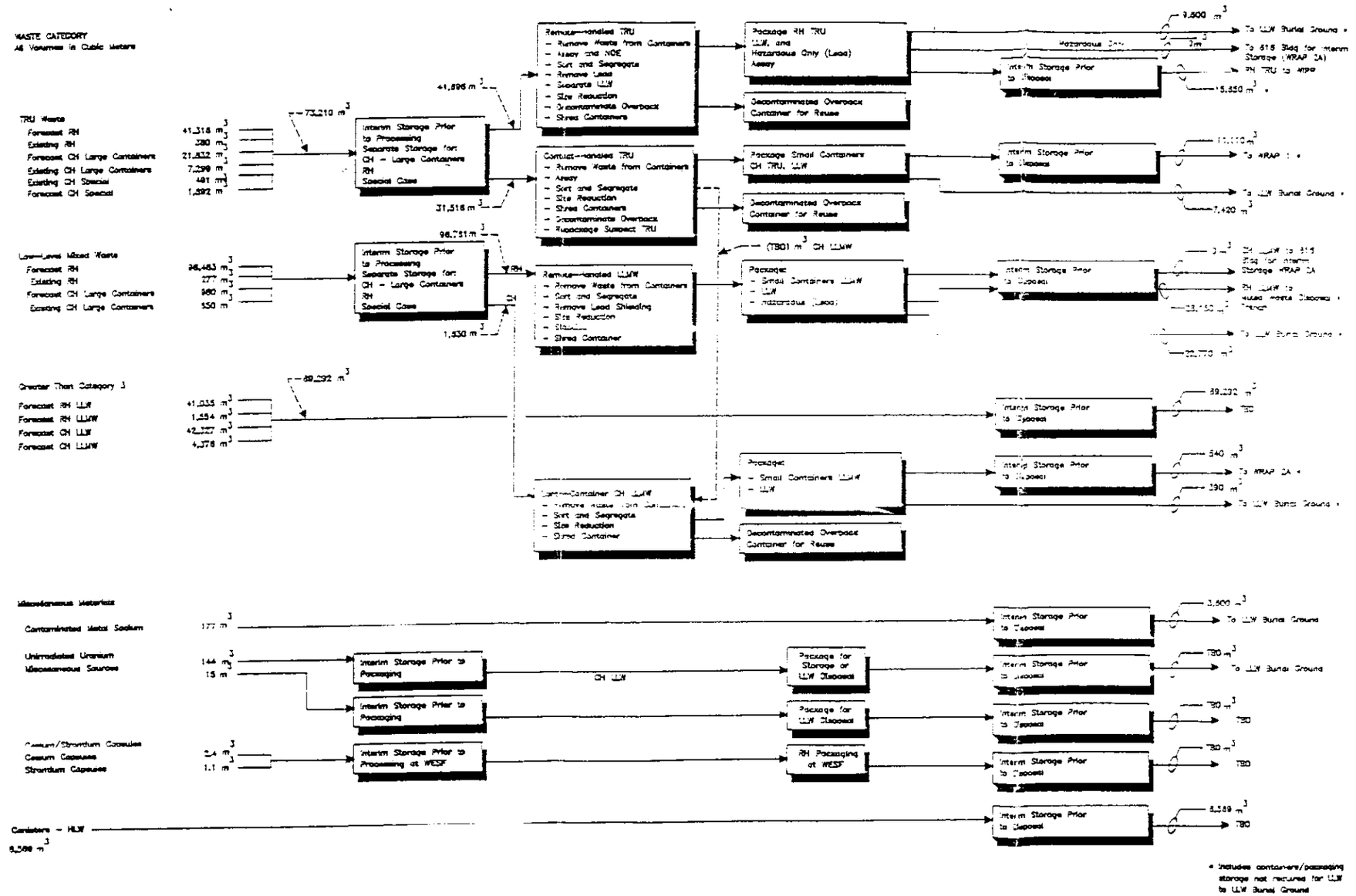
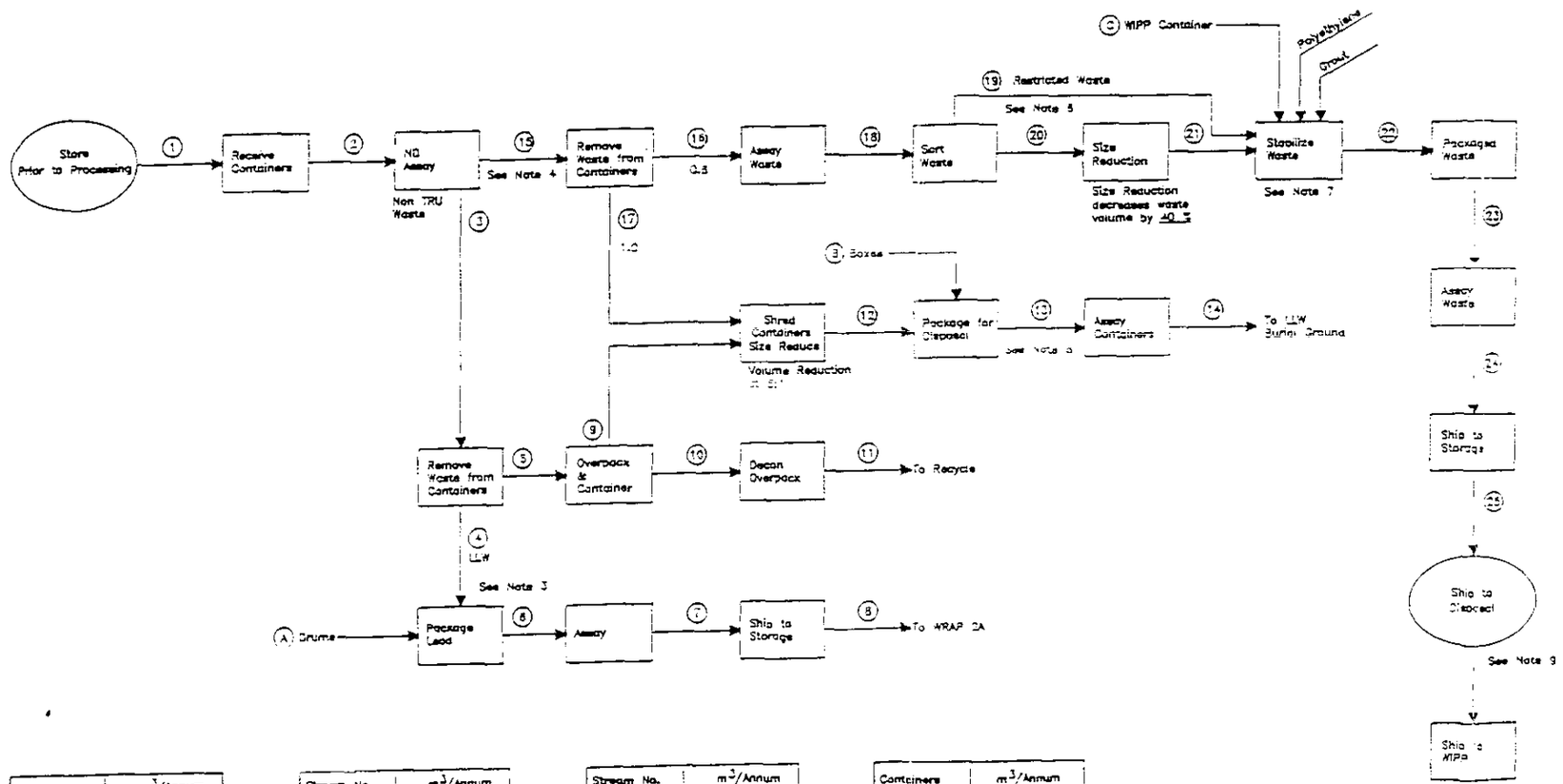


Figure A.4-2. RH TRU Process Flow Diagram.



NOTES:

1. Some RH TRU will be received in overpacks. The overpacks will be decontaminated and reused.
2. Some stream (3) could diverted to the RL LLMW facility. This stream is considered to be non LLMW for the analyses.
3. Stream (4) is included at a value of zero (0) but lead is not in current PNL model.
4. See process logic for volume analysis. Values adjusted for void space. Overall volume reduction of 60% is expected.
5. Some waste will be received in overpacks. Volume of overpacks is excluded from the analyses as the overpacks will be recycled.
6. Approximately 10% of stream (19) is considered restricted waste and bypasses size reduction.
7. All waste is assumed to be packaged in WIPP containers with some recovery of volume to maintain the container at 30 to 35 % including some of the void space with the equipment.
8. Shredded containers in boxes have a volume increase by approximately 15%.
9. Storage volume based on WIPP containers.
10. Waste in container is assumed to be 60% of exterior container volume. Container has a void space of 30% of the external volume. The volume of the equipment items is assumed to be 15 to 25% of the waste volume

Stream No.	m^3/Annum
1	1940
2	1940
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

TBD = To Be Determined

Stream No.	m^3/Annum
11	0
12	388
13	456
14	456
15	1940
16	580
17	1940
18	1164
19	58
20	1106

Stream No.	m^3/Annum
21	524
22	728
23	728
24	728
25	728

Containers	m^3/Annum
A—Drums	200 l — TBD
B—Boxes	SWB — TBD
C—WIPP Cont.	600 ft.
D—	
E—	

Figure 1
DESIGN DATA:

41,596 m^3 Total Volume
Annual Volume = 1,940 m^3
21.5 Years

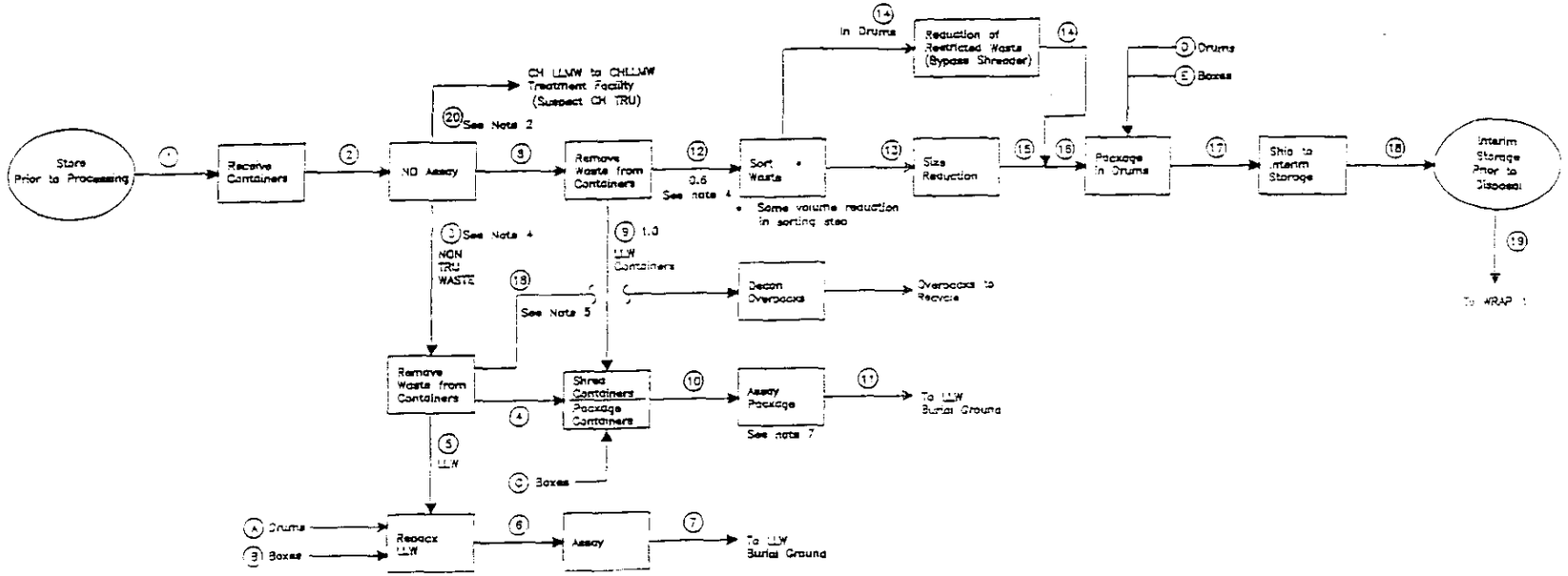
ACAD FILE: 9500ZQ

Figure A.4-3. CH TRU Process Flow Diagram.

CONTACT HANDLED TRU WASTE

IN LARGE CONTAINERS & SPECIAL CHTRU WASTE

WITH OVERPACKS



Stream No.	m^3/Annum
1	[illegible]
2	1466
3	-
4	0
5	0
6	0
7	0
8	1466
9	1466

* TBD = To Be Determined

Stream No.	m^3/Annum
10	293
11	345
[illegible]	[illegible]
13	880
14	40
15	[illegible]
16	440
17	517
18	
19	TBD
20	TBD

Containers	m^3/Annum
A–Drums	200 – TBD
B–Boxes	SWB – TBD
C–Boxes	SWB – TBD
D–Drums	[illegible] – TBD
E–Boxes	SWB – TBD

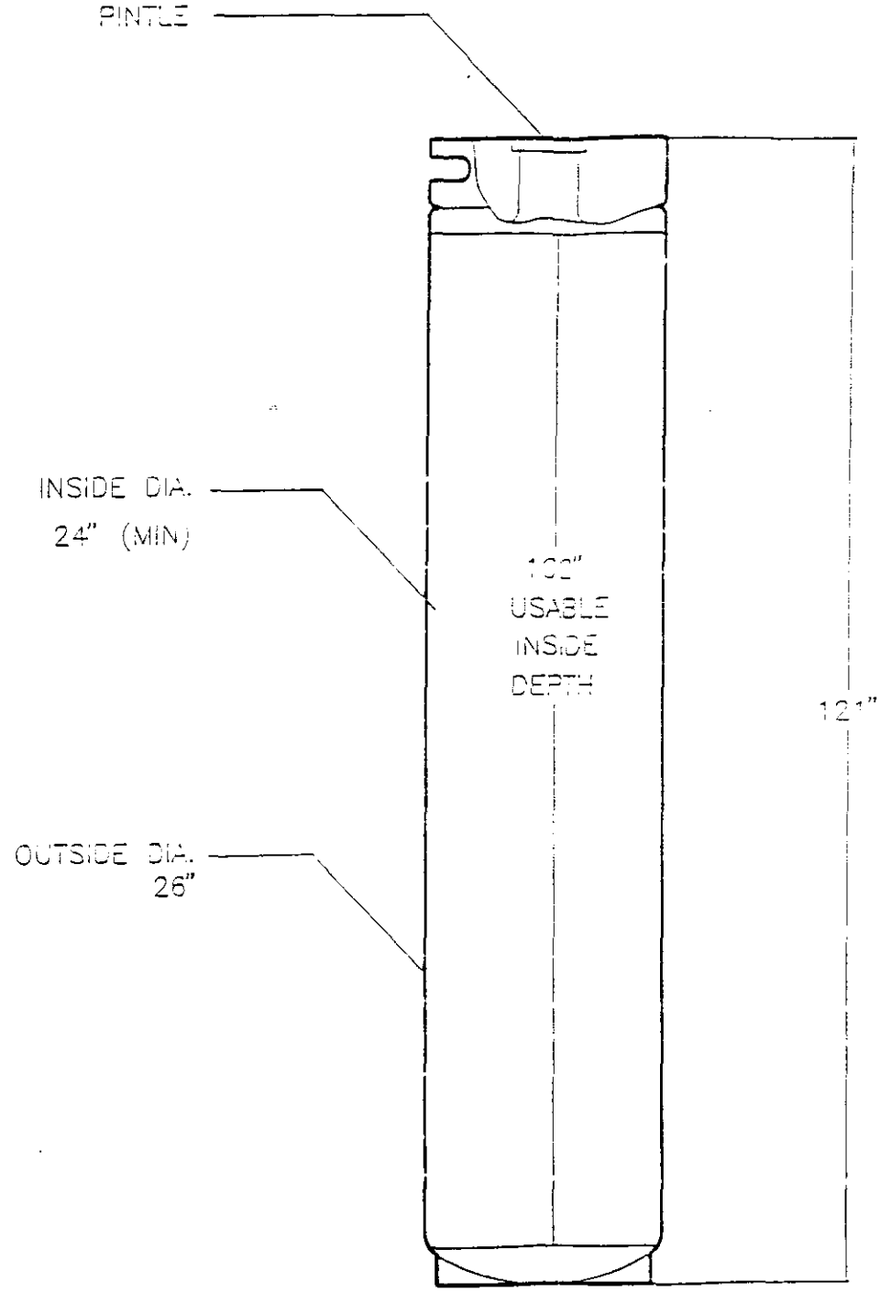
NOTES:

1. Some CH TRU waste will be received in overpacks. The overpacks will be decontaminated and reused.
2. Suspect CHTRU could be sent to to CHLLMW if assay indicated that it was a NON–TRU stream (20). For this analysis, the value of stream (20) is assumed to be zero (0).
3.
4. See process logic for volume analysis. Values–adjusted for space. Overall volume reduction of 70% is expected. waste in containers is assumed To be 80% of external container volume. The container has a void space of 80% of exterior volume. The volume of equipment is assumed to be 15% to 25% of the waste envelope volume.
5. Some waste could be received in overpacks. Overpacks would be deconed if necessary and recycled. For this analysis the value of stream (18) is zero (0).
6. [illegible] 200 L drums. Drums storage will add about 25% to overall volume required.
7. Packaging waste adds approximately 15% to waste volume.

DESIGN RATE:

31,514 m^3 Total Volume
Annual Volume – 1466 m^3
21.5 Years

Figure A.4-4. Proposed WIPP Canister Diagram.



NOTE:

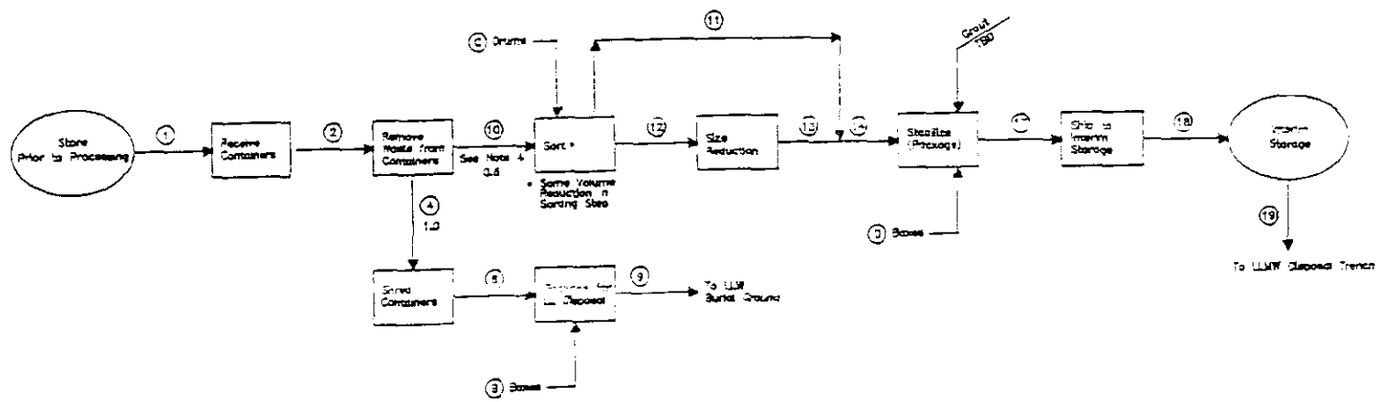
INTERNAL VOLUME = 756 LITERS, 46,140 CUBIC INCHES, ASSUMED PACKING EFFICIENCY OF 85%

PROPOSED WIPP CANISTER

Figure A.4-5. RH LLMW Process Flow Diagram.

REMOTE HANDLED LLMW

MASF, T-PLANT



Stream No.	m³/Annum
1	4600
2	4600
3	–
4	4600
5	–
6	–
7	–
8	900
9	[illegible]
10	2700

TBD = To Be Determined

Stream No.	m³/Annum
[illegible]	[illegible]
12	2117
13	1056
14	1112
15	–
16	–
17	1309
18	1309
19	1309

Containers	m³/Annum
A–	
B–Boxes	TBD
C–Drums	TBD
D–Boxes	TBD
E–Drums	TBD

NOTES:

1. First part step: 10% bypasses size reduction and is packaged in 208 l drums and sent to Thermal Treatment. 5% bypasses size reduction and proceeds to Stabilization.

2. See process Logic for Volume analysis. Values adjusted for void space. Overall volume reduction is expected to be approximately 70% for waste going to LLMW disposal trench. Container volume is assumed to be 20% of external volume. Volume reduction of container is expected to be by a factor of 5. The internal void volume of the container is 80%. The hard equipment volume is estimated at 10% to 15% of the exterior container volume. The envelope equipment volume is 25 to 30% of the exterior container volume. The average container has about 50% void space.

Figure

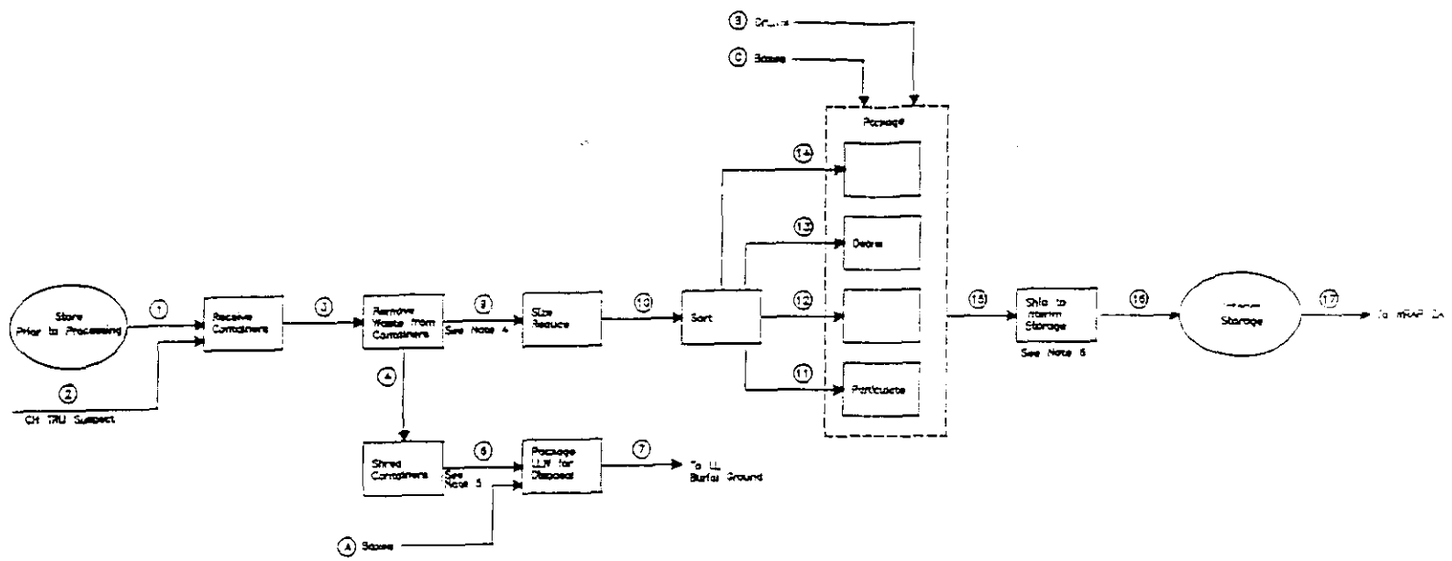
DESIGN DATA

96,780 m³ Total Volume
Annual Volume – 4,500 m³
21.5 Years

ACAD FILE: 960019

Figure A.4-6. CH LLMW Process Flow Diagram.

CONTACT HANDLED LLMW IN LARGE CONTAINERS



NOTES:

1. Sort of Stream 10 is assumed to equal 3 even sub streams.
2. The organic substream is assumed to go to a thermal treatment operation. Shredding container is a 200 l drum.
3. CH TRU Suspect Stream 2 is assumed to be a zero value.
4. See process logic for volume analysis. Values adjusted for void space. Overall reduction is expected to be about 70% for waste stream to WRAP 2A.
5. Shredded volume of container for streams (4), (5) & (7).
6. Assumes waste is packaged in 200 L drums with an effective package efficiency of 35% volume indicated is in drums.

Stream No.	m^3/Annum
1	76
2	TBD *
3	76
4	76
5	–
6	15
7	18
8	–
9	33

* TBD = To Be Determined

Stream No.	m^3/Annum
10	21
11	11
12	
13	11
14	
15	25
16	25
17	25

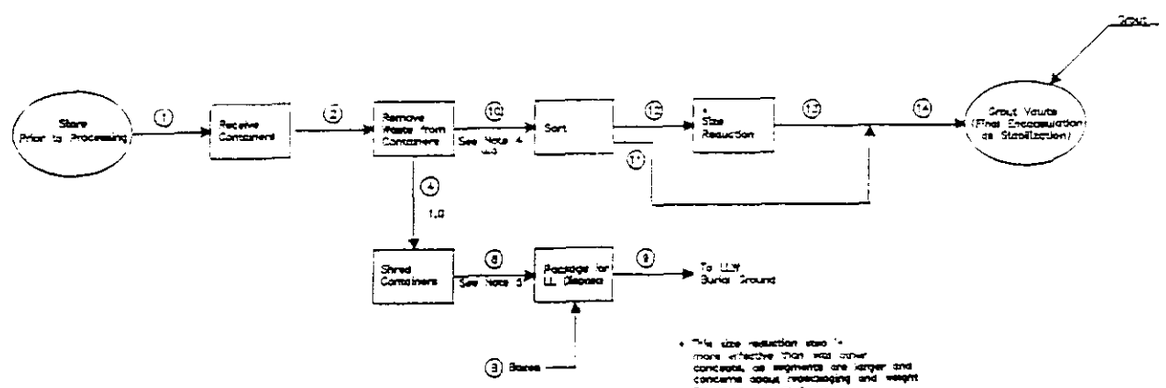
Containers	m^3/Annum
A–Boxes	TBD
B–Drums	TBD
C–Boxes	TBD
D	
E	

Figure
DESIGN DATA:
1,500 m^3 Total Volume
Annual Volume – 76 m^3
21.5 Years

ACAD FILE: 250017

Figure A.4-7. RH LLMW Process Flow Diagram - Grout.

REMOTE HANDLED LLMW
GROUT FACILITY



NOTES:

1. Container volume is assumed to be 20% of external volume. Volume reduction of container is expected to be by a factor of 5. The internal void volume of the container is 80%. The hard equipment volume is estimated at 10 to 15 % of the exterior container volume. The equipment envelope volume is 25 to 30% of the exterior container volume. The average container has about 50% void space.
2. 5% bypasses size reduction and processes to Stabilization.
3. –
4. See process logic for volume analysis. Values adjusted for void space. Overall volume reduction is expected to be approximately 80% for waste. Additional volume in the grout vault is anticipated as small. Containers are not used and the packing volume is expected to be more effective.
5. Shredded volume of container for streams 4 & 9.

* This size reduction step is more effective than was other concepts, as segments are larger and concerns about repackaging and weight limitation are not factors.

Stream No.	m^3/Annum
1	4600
2	4600
3	–
4	4600
5	–
6	–
7	–
8	900
9	1058
10	2700

* TBD → To Be Determined

Stream No.	m^3/Annum
11	50
12	2160
13	800
14	860
15	–
16	–

* Includes Some Rounding Adjustments.

Containers	m^3/Annum
A–	
B–Boxes	TBD
C–Drums	TBD
D–	
E–Drums	TBD

Figure

DESIGN RATE:

26,737 m^3 Total Volume
Annual Volume – 4,600 m^3
21.5 Years

ACAD FILE: 350022

Figure A.4-8. Suggested Box/Container Configuration.

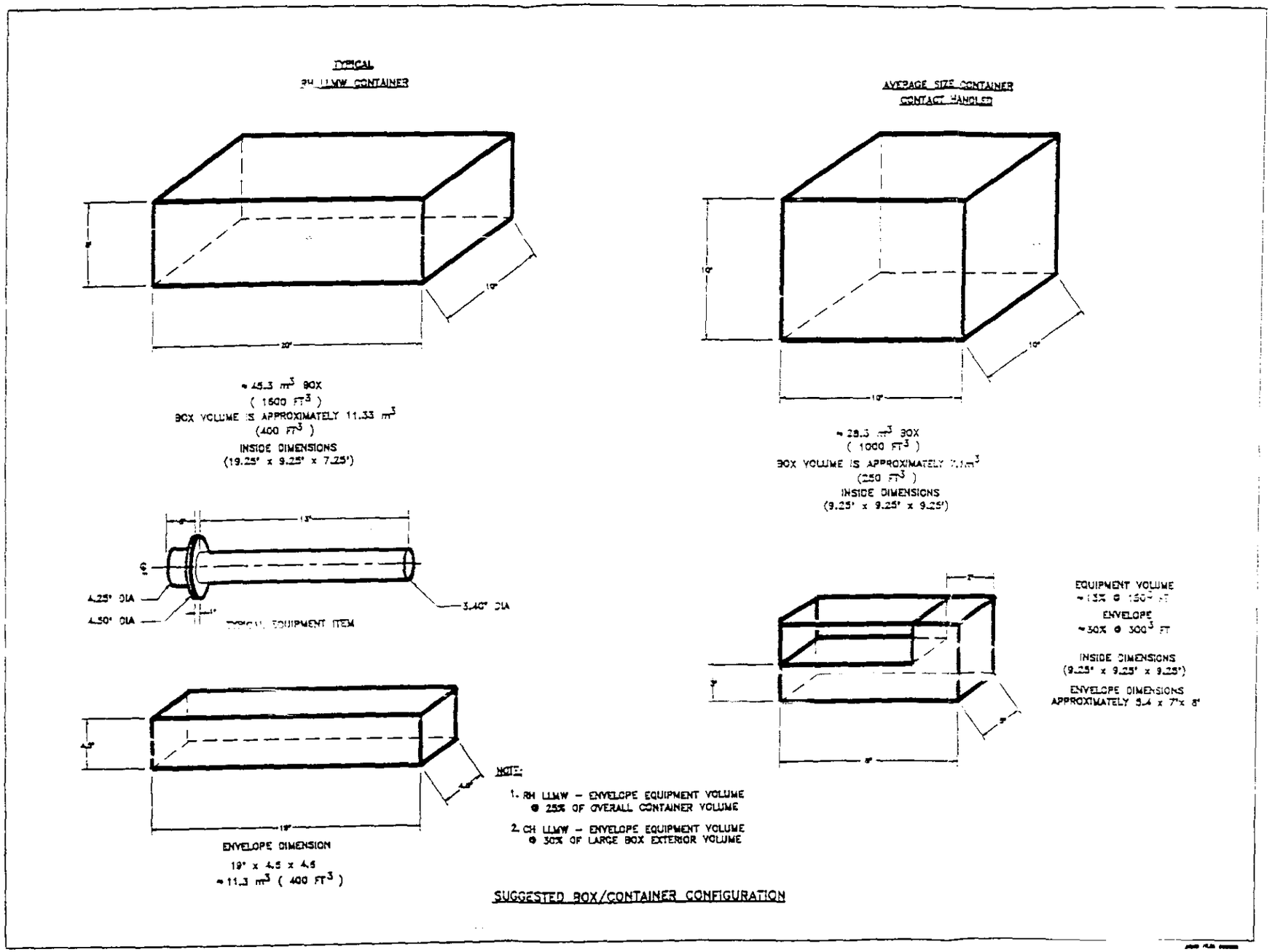
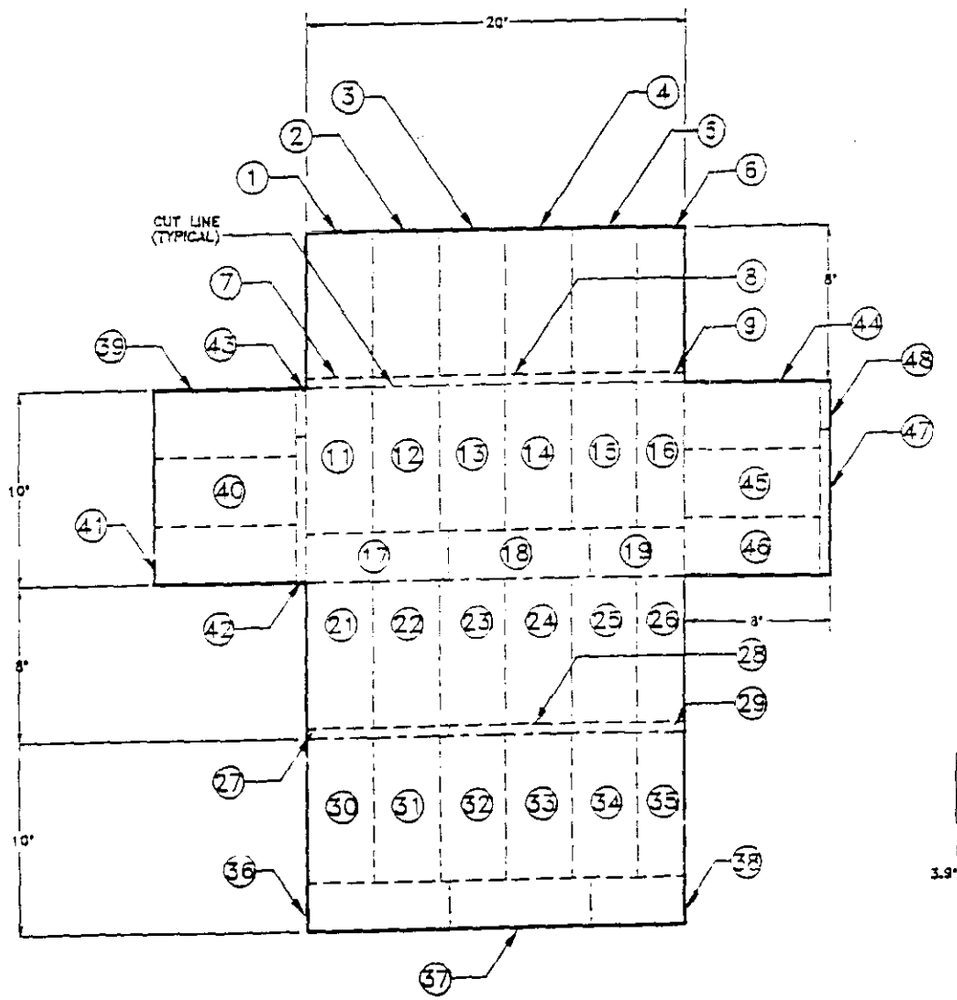


Figure A.4-9. Box Size Reduction.

LARGE CONTAINER EXTENDED SURFACE



NOTES:

1. BOX DIMENSIONS ARE OVERSTATED & DO NOT INCLUDE WALL THICKNESS OF 4.5 INCHES AT ENDS.
2. BOX PACKAGING DOES NOT INCLUDE A WEIGHT RESTRICTION
3. PIECE SIZES ARE INCLUDED BELOW ON PLANS OF BOX AS ⑨.

SIDES 2 AT 8 FT. BY 20 FT.	WIDTH	LENGTH	NO. OF PIECES
PIECES 1 TO 5 & 21 TO 25	3.5	7.5	10
7, 8, 27, & 28	0.5	7.5	4
6 & 26	2.5	7.5	2
9 & 29	0.5	5	2

TOP/BOTTOM 2 AT 10 FT. BY 20 FT.	WIDTH	LENGTH	NO. OF PIECES
PIECES 11 TO 15 & 30 TO 34	3.5	7.5	10
17, 18, 38, & 37	2.5	7.5	4
16 & 35	2.5	7.5	2
19 & 38	2.5	5	2

ENDS 2 AT 8 FT. BY 10 FT.	WIDTH	LENGTH	NO. OF PIECES
PIECES 39, 40, 44, & 45	3.5	7.5	4
41 & 46	3	7.5	2
42 & 47	0.5	7.5	2
43 & 48	0.5	7.5	2

PACKING —ASSUME PIECES ARE 0.375 FT. THICK AND 10 PIECES PER BOX

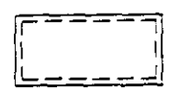
BOX 1 PIECES 1 TO 5 AND 11 TO 15	10
BOX 2 PIECES 21 TO 25 AND 30 TO 34	10
BOX 3 PIECES 39 TO 41 AND 44 TO 46	8

SMALL PIECES

6, 7, & 8	1
26, 27, & 28	1
17, 9, & 29	1
18, 42, & 47	1

BOX 4 SMALL PIECES

16, 43, & 48	1
19	1
35	1
38	1
37	1



INSIDE DIMENSIONS:
3.9' WIDE x 4' HIGH x 8'
(123 FT)
3.47 m^3

BOX SIZE REDUCTION

Table A.4-1. Estimated Total Volume Annual Treatment Rates for LLMW and TRU Waste.

Waste Type	Total Waste Volume	Per Annum
RH TRU	42,000 m^3	1,940 m^3
CH TRU	31,500 m^3	1,500 m^3
RH LLMW	97,000 m^3	4,500 m^3
CH LLMW	1,600 m^3	75 m^3

RH TRU: Remote-Handled Transuranic Waste
CH TRU: Contact-Handled Transuranic Waste
RH LLMW: Remote-Handled Low-Level Mixed Waste
CH LLMW: Contact-Handled Low-Level Mixed Waste

Table A.4-2. Estimated Quantities of Miscellaneous Sources.

TYPES	AMOUNTS (15 m^3 OVERALL)	STORAGE AREA
Fuel Assemblies - PWR Elements - BWR Elements - Cut Fuel Pieces	3 m^3 Total 5 PWR elements 2 BWR elements	Building 324 B&D Cells (220 Kg) 327 Building (9 Kg) 325 Building (2 Kg)
Borosilicate Glass Canisters - 47 Canisters	4.7 m^3 total	Building 324 B Cell (15 canisters) Building 324 A Cell (32 canisters)
High-Dose Rate LLW and RMW - Dispersible Fines - Dry Residue From Melter Runs - Oil Absorption Materials - Liquid Metal Sealant	10, 200 liter drums of fines 170 liters of dry residue	Building 324 B Cell
RH TRU Materials From Cell Operations	0.7 m^3 total, in 202, 1-gallon cans	327 Building
Strontium Fluoride Contained in four 2-in.-dia. pipes	0.0015 m^3 total (777 grams)	325A B Cell
Neptunium Oxide Powder	0.2 m^3 total volume 48 grams net mass of oxide	Building 324 basement
Non-Fuel Bearing Reactor Components Fuels assembly parts: - Control Rod - Poison Rod - Column Blade	0.2 m^3 total volume	Building 324 B&D Cells

Table A.4-3. Container Size.

U.S. SIZE	METRIC VOLUME	U.S. DIMENSIONS	METRIC DIMENSIONS	MAX WEIGHT LIMIT
55-gal Drum	200 Liters	22-in. dia. x 34 in.	559-mm dia. x 866 mm	380-kg Gross
96 cubic ft	2.719 m^3	4-ft x 4-ft x 6-ft Box	1.216-m x 1.216-m x 1.829-m Box	
128 cubic ft	3.625 m^3	4-ft x 4-ft x 8-ft Box	1.216-m x 1.216-m x 2.439-m Box	2,260-kg Gross
576 cubic ft	16.31 m^3	6-ft x 8-ft x 12-ft Box	1.829-m x 2.439-m x 3.658-m Box	
175 cubic ft	4.956 m^3	5-ft x 5-ft x 7-ft Box	1.524--m x 1.524-m x 2.337-m Box	
67.21 cubic ft WIPP	1.903 m^3	37-in. x 71-in. x 54.25-in. Box	0.94-m x 1.803-m x 1.378-m Box	1,840-kg Gross
225 cubic ft Metal Overpack	8.333 m^3	5-ft x 5-ft x 9-ft Box	1.524-m x 1.524-m x 2.743-m Box	
HLW Vitrification Canisters	1.689 m^3	27-in. dia. x 15 ft	686-mm dia. x 4.57 m	3,350-kg Gross
WIPP Canister	= 600 Liters	26-in. dia x 10 ft., 1 in.	66-mm dia. x 3.07 m	3,600-kg Gross

Table A.4-4. Container Size-Reduction Logic.

Step	Procedure
1.	Average Container Dimensions (45 m^3) are 8 ft x 10 ft x 20 ft = 1,600 sq. ft.
2.	Net Container Volume = 9 m^3 (318 cu. ft.).
3.	Sections Cut to fit a 1.2 m x 1.2 m x 2.4 m plywood box (no weight consideration).
4.	The pieces would fit into 2.7 boxes, with pieces being 1.1 m x 2.2 m. • Box 1 - Pieces 1 to 5 and 11 to 15 (10 cut pieces). • Box 2 - Pieces 21 to 25 and 30 to 34 (10 cut pieces). • Box 3 - Pieces 39 to 41 and 44 to 46 (6 cut pieces). Small Pieces: 6, 7, and 3 (3 pieces) 26,27, and 28 (3 pieces) 17, 9, and 29 (3 pieces) 18, 42, and 47 (3 pieces) • Box 4 (Miscellaneous small pieces) Small pieces: 16, 43, and 48 (3 pieces) 19 (1 piece) 35 (1 piece) 36 (1 piece) 37 (1 piece) 38 (1 piece)

Table A.4-5. Estimated Volume of Waste to be Stored (per average container).

Waste Type	Estimated Volume
Small-size waste	0.5 m^3 200-L drums
Size-Reduced waste	7 to 13 m^3 HIC boxes
Contingency	0 to 2.0 m^3
LLW Containers	13 m^3 in Plywood boxes to LLW burial ground, if required

Table A.4-6. Storage Requirements Prior to Treatment and Disposal.

CATEGORY	PRE-PROCESSING YEAR WITH MAX PROJECT STORAGE VOLUME	MAX VOLUME m^3 PRIOR TO TREATMENT*	POST-PROCESSING YEAR WITH MAX PROJECT STORAGE VOLUME	MAX VOLUME m^3 PRIOR TO DISPOSAL OR FINAL PROCESS BY WRAP-1 OR -2A**
HLW Canisters	2006	451	2023	15,460
CH LLMW (Drums)	2001	860	2023	871
RH LLMW (HICs)	2002	11,200	2023	38,500
CH LLMW GTC 3	1995	N/A	2023	4,500
CH LLW GTC 3	2001	N/A	2023	43,000
RH LLMW GTC 3	1995	N/A	2023	1,600
RH LLW GTC 3	1995	N/A	2023	41,500
CH TRU - Treated (Drums)	2001	8,500	2023	16,860
RH TRU - Treated (WIPP)	2006	14,500	2023	30,640
Cesium Capsules		3	2010	TBD
Strontium Capsules		1	2010	TBD
Miscellaneous Sources	1995	15	2023	60
Contaminated Metallic Sodium	2008	177		N/A
Unirradiated Uranium	2006	144	2023	144 TBD

*No allowance for container/packagestorage.
**Volume includes containers and access space for handling containers.

Table A.4-7. Estimated Costs for CH and RH Storage Facilities.

ESTIMATED COSTS FOR CH AND RH STORAGE FACILITIES		
Work Breakdown Structure	Contact-Handled Cost Per Sq. Ft.	Remote-Handled Cost Per Sq. Ft.
1.0 Design and A/I During Construction	$13,923,144	$63,582,579
2.0 Procurement	$0	$21,170,000
3.0 Construction	$18,543,000	$84,680,000
3.1 Construction Management (ICF KH)	$8,829,117	$40,319,781
4.0 Project Management (WHC)	$2,376,153	$10,851,141
Contingency	$11,207,919	$51,183,014
Total	$54,879,333	$271,786,515
ESTIMATED COST PER SQ. FT.		
1.0 Design and A/I During Construction	$52.56	$300.34
2.0 Procurement		$100.00
3.0 Construction	$70.00	$400.00
3.1 Construction Management (ICF KH)	$33.33	$190.46
4.0 Project Management (WHC)	$8.97	$51.26
Contingency	$42.31	$241.77
Total	$207.17	$1,283.83
Volume (m^3)	46,703	42,589
Floor Space (Sq. Ft.)	264,900	211,700

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SOLID WASTE AND MATERIALS SYSTEMS ALTERNATIVES STUDY

VOLUME III

APPENDIX A.5
Alternative 4 Computer Modeling & Output

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A.5 ALTERNATIVE 4 MODEL ASSUMPTIONS, FLOW DIAGRAMS, AND RESULTS

This section provides the waste processing assumptions, functional flow diagrams, and model results for Alternative 4. The first section, which addresses the waste processing assumptions, describes the assumptions associated with each of the functional flow diagrams presented in Section 6.3. These assumptions identify volume increases or decreases associated with waste processes, as well as waste routing splits based on percentages of the volume. The second section shows the functional flow diagrams for Alternative 4 which incorporate these assumptions. The model results of annual throughputs and storage levels that correspond with each of these diagrams are provided in the third section.

A.5.1. Assumptions Associated with Functional Flow Diagrams

The assumptions associated with the functional flow diagrams presented in Section 6.3 are waste stream specific. The waste stream specific assumptions follow.

A.5.1.1 Assumptions for Remote-Handled Transuranic Waste.

Incoming RH TRU waste considered "suspect" received a 3.0 increase to account for the overpack. The assumptions that apply to the functions for processing remote-handled transuranic waste follow:

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.6 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 37.5% was assumed to be the waste and 62.5% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.5.1.2 Assumptions for Contact-Handled Transuranic Waste in Large Containers and Drums Requiring Specialized Treatment.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.6. In addition, it was assumed that 37.5% of the volume exiting this function would be waste and the remaining 62.5% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Assay. After TRU waste assay, 15% of the "suspect" TRU waste volumes were assumed to be CH_LLMW.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.5.1.3 Assumptions for Remote-Handled Low Level Mixed Waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.2% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Stabilization. Waste volumes requiring stabilization were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.5.1.4 Assumptions for Contact-Handled Low Level Mixed Waste in Large Containers.

- Waste Removal from Overpack and Container. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume

to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal for Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.5% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

- WRAP 2A. It was assumed that any LLMW requiring non-thermal stabilization would be routed to WRAP 2A for final processing prior to disposal.

- Thermal Treatment. It was assumed that any LLMW requiring thermal destruction would be sent to a commercial thermal treatment facility for processing prior to disposal.

A.5.1.5 Assumptions for Greater Than Category 3 Low-Level Waste.

No assumptions were made for this waste.

A.5.1.6 Assumptions for Contaminated Metallic Sodium.

No assumptions were made for this material.

A.5.1.7 Assumptions for Unirradiated Uranium.

No assumptions were made for this material.

A.5.1.8 Assumptions for Miscellaneous Sources.

No assumptions were made for these waste and materials.

A.5.1.9 Assumptions for Cesium/Strontium Capsules.

No assumptions were made for this material.

A.5.1.10 Assumptions for High Level Waste Canisters.

No assumptions were made for this waste.

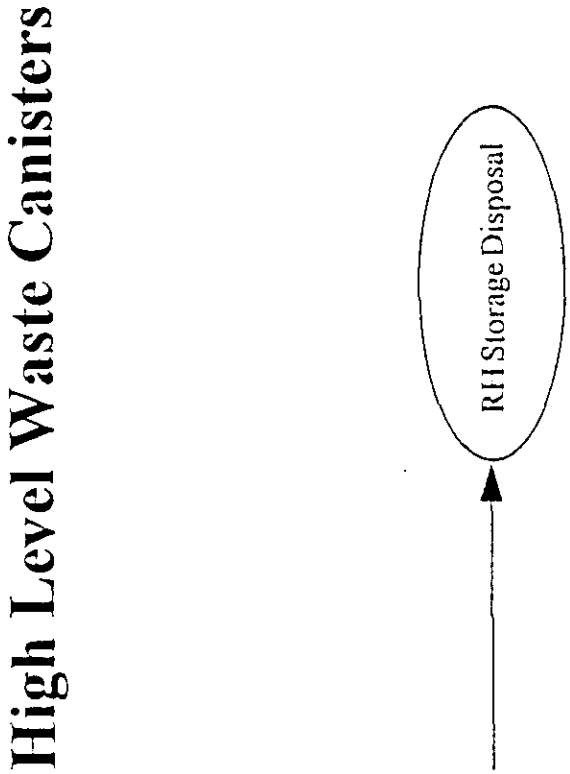
A.5.2 Functional Flow Diagrams Including Assumptions for Alternative 5

Figures A.5-1 through A.5-11 show the Alternative 4 functional flow diagrams. These flow diagrams include the assumptions defined in section A.5.1 and also incorporate additional functions added due to the requirements of the model to reflect the macro-level system. These functions include "Process

Facility Receiving" and "Process Facility Shipping." Both of these functions were added to the flow diagrams every occurrence that waste entered or exited the macro level processing facility in Alternative 4.

These functional flow diagrams for Alternative 4 are the basis for the model results presented in Sections A.5.3 and A.5.4.

Figure A.5-1. Alternative 4 Functional Flow Diagram for High Level Waste Canisters.



Remote-Handled Transuranic Waste

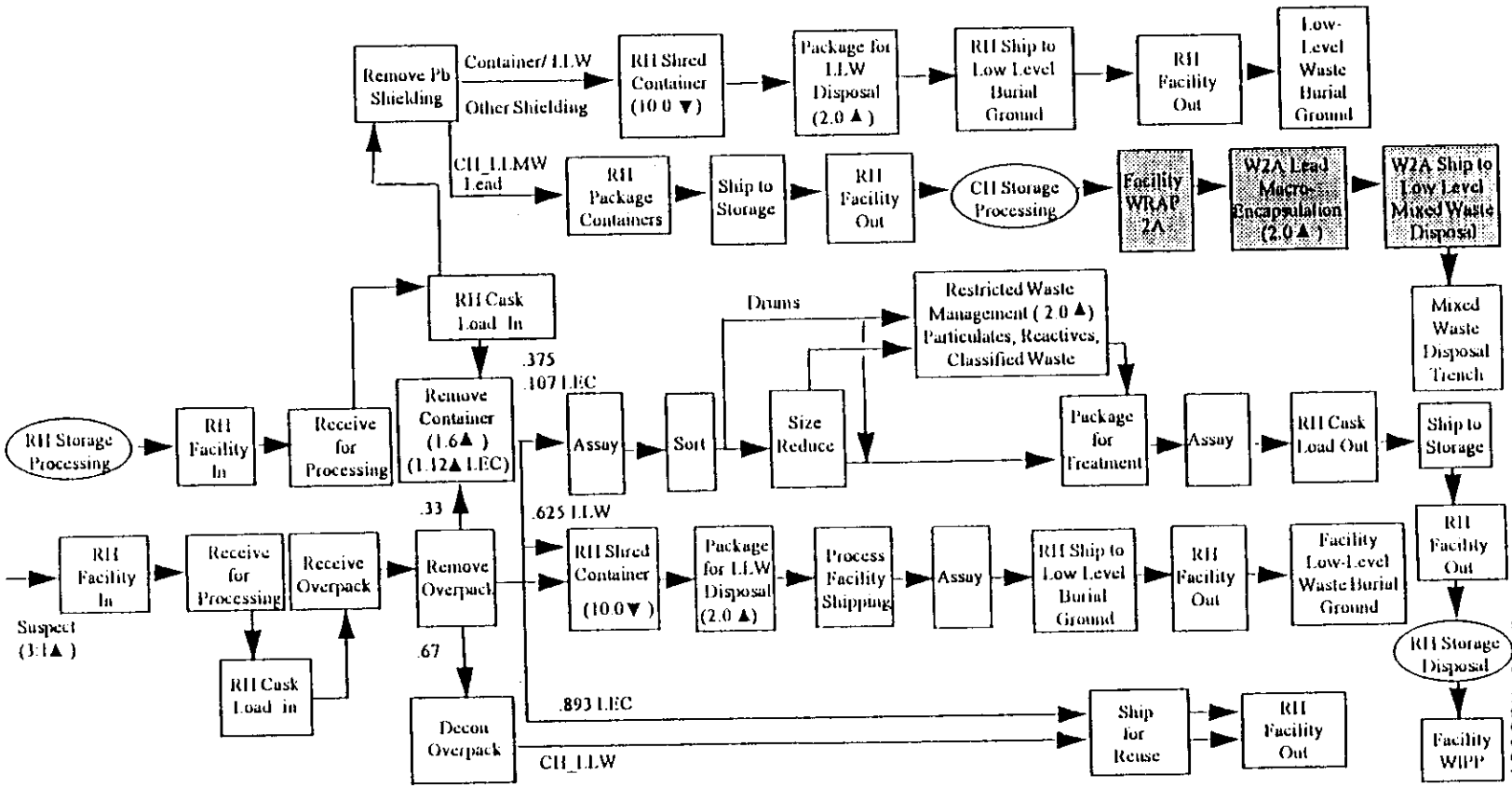


Figure A.5-2. Alternative 4 Functional Flow Diagram for Remote-Handled Transuranic Waste.

Figure A.5-3. Alternative 4 Functional Flow Diagram for Contact-Handled Transuranic Waste in Large Containers and Requiring Special Treatment

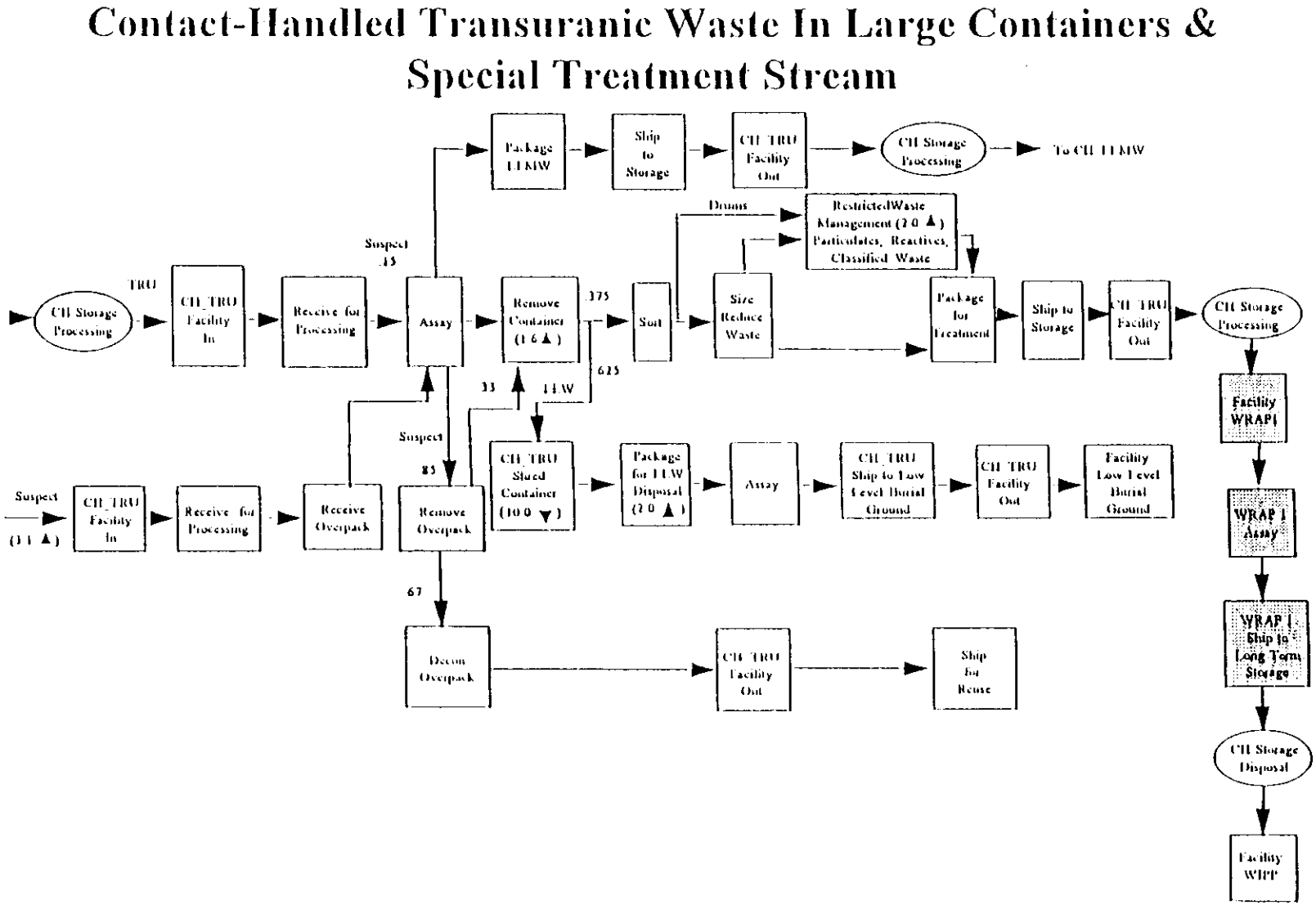


Figure A.5-4. Alternative 4 Functional Flow Diagram for Contaminated Soils and Buried Pre-1970 Waste.

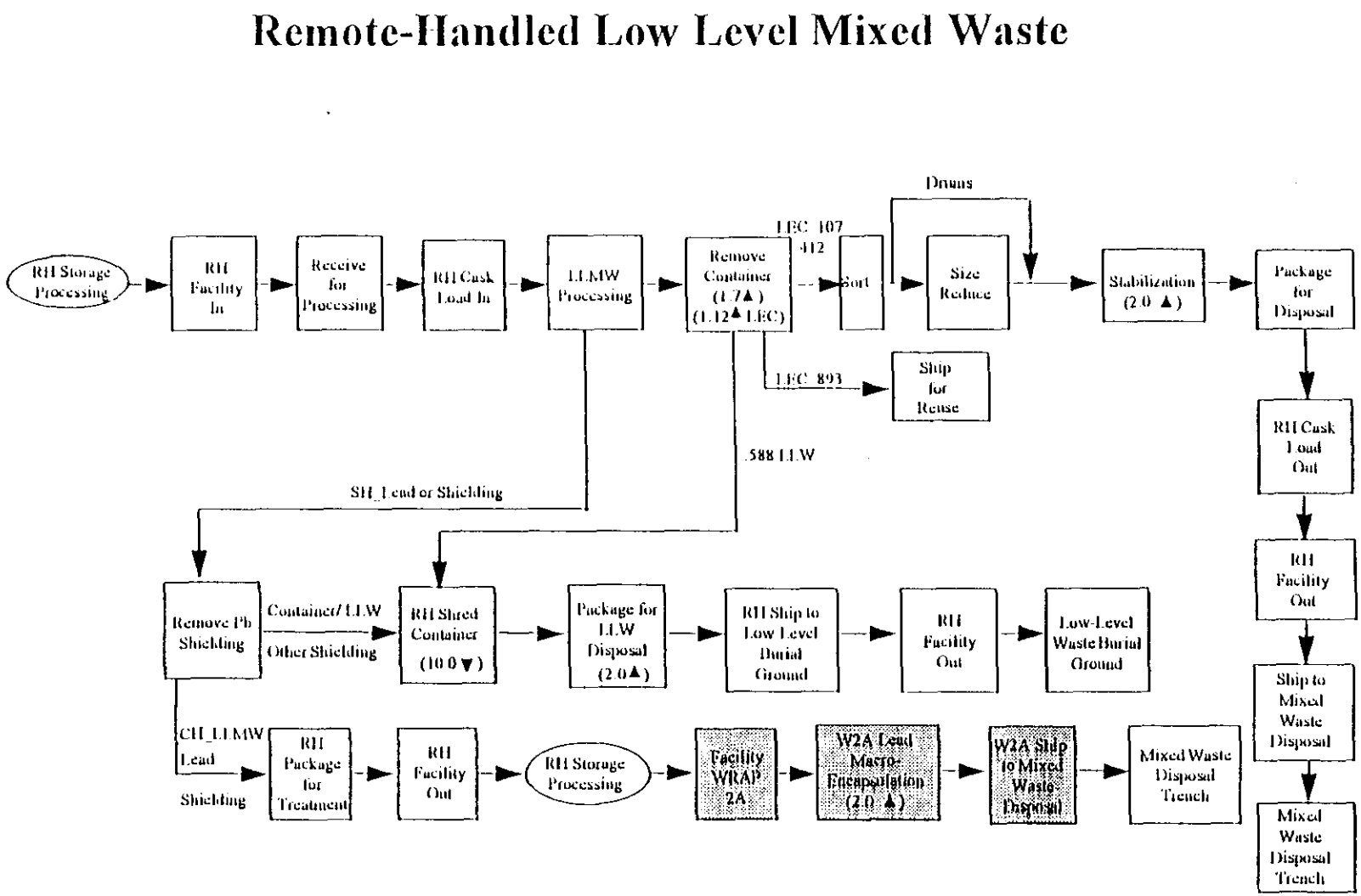


Figure A.5-5. Alternative 4 Functional Flow Diagram for Contact-Handled Low Level Mixed Waste.

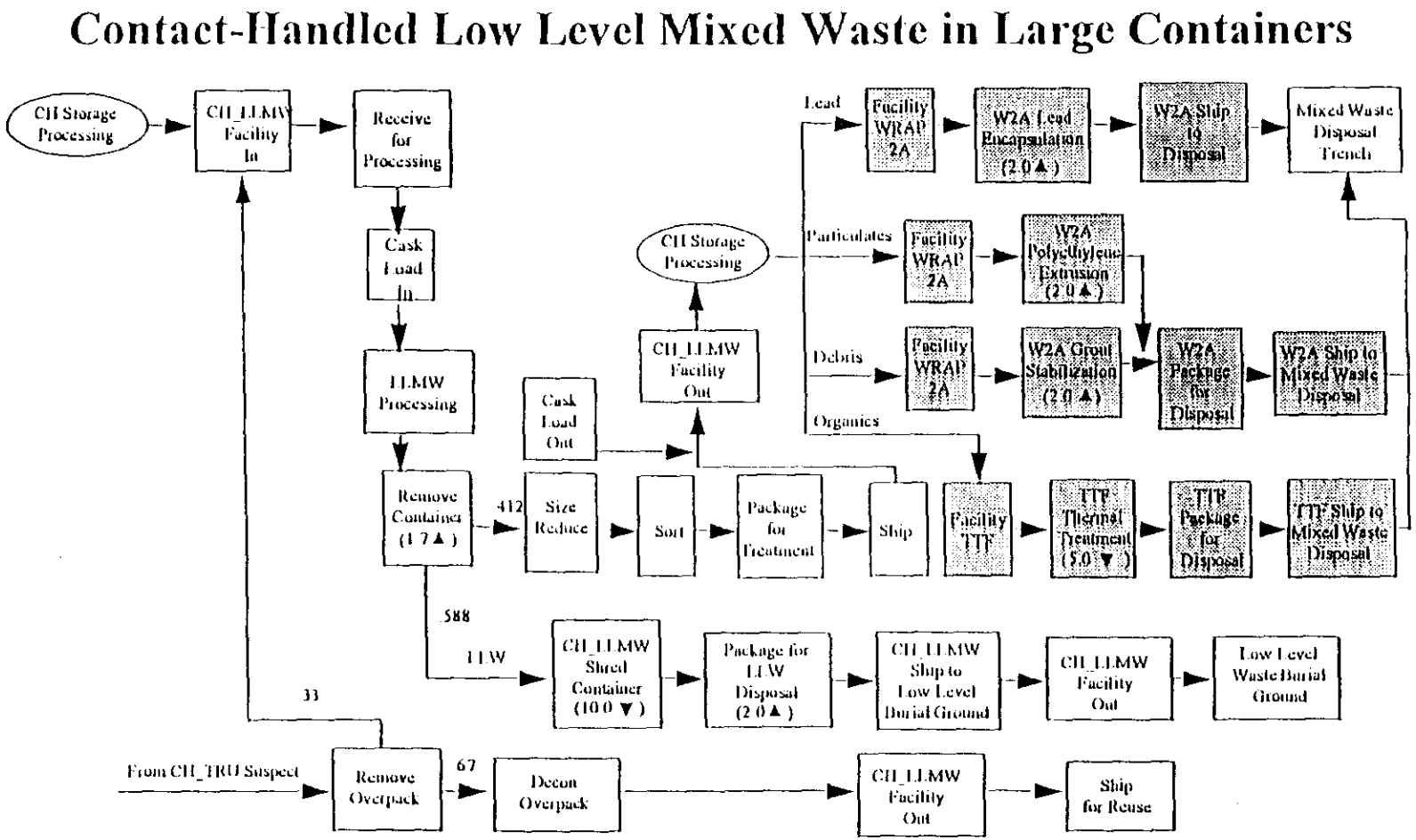


Figure A.5-6. Alternative 4 Functional Flow Diagram for Remote-Handled Greater Than Category III Waste.

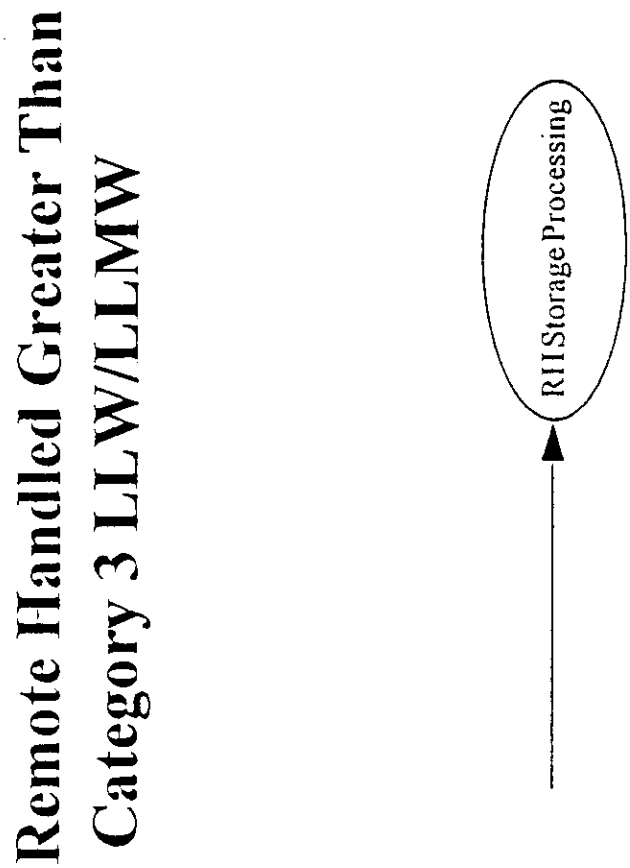


Figure A.5-7. Alternative 4 Functional Flow Diagram for Contact-Handled Greater Than Category III Waste.

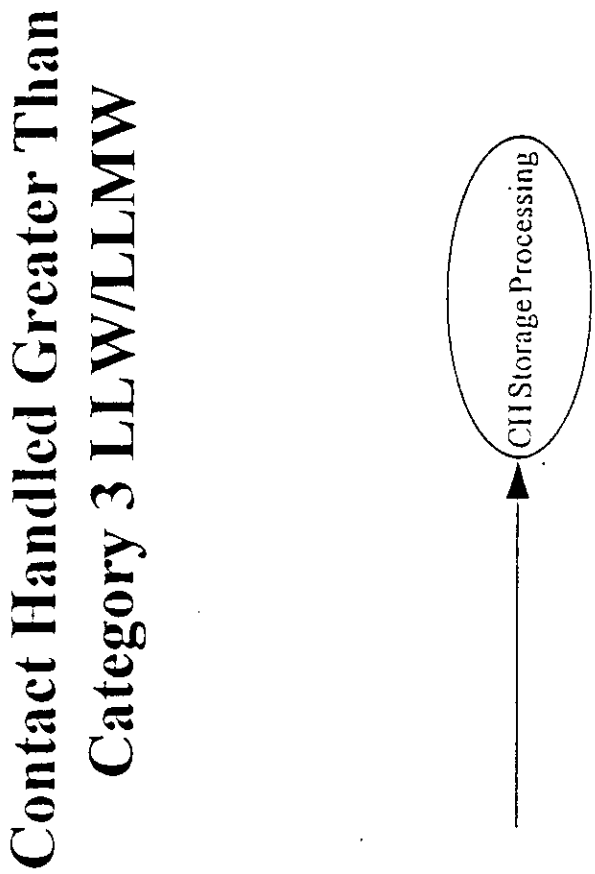


Figure A.5-8. Alternative 4 Functional Flow Diagram for Contaminated Metallic Sodium.

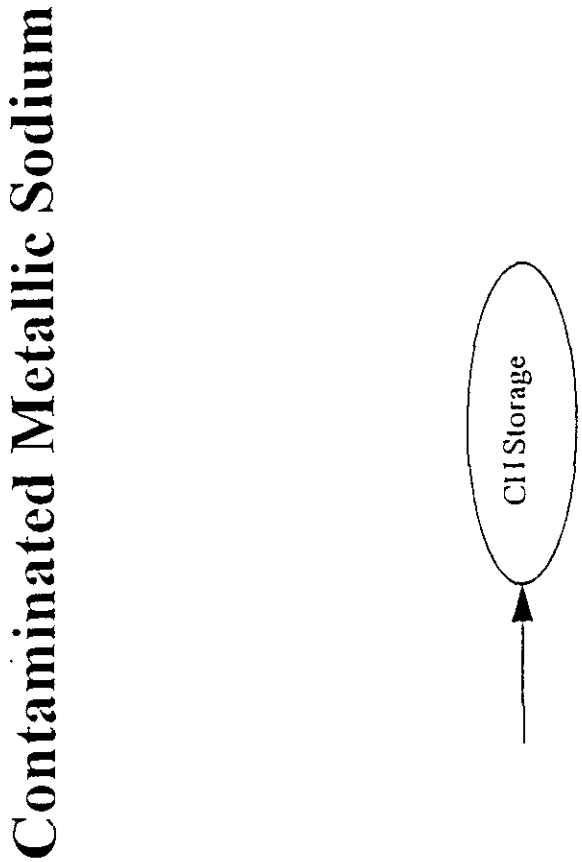


Figure A.5-9. Alternative 4 Functional Flow Diagram for Unirradiated Uranium.

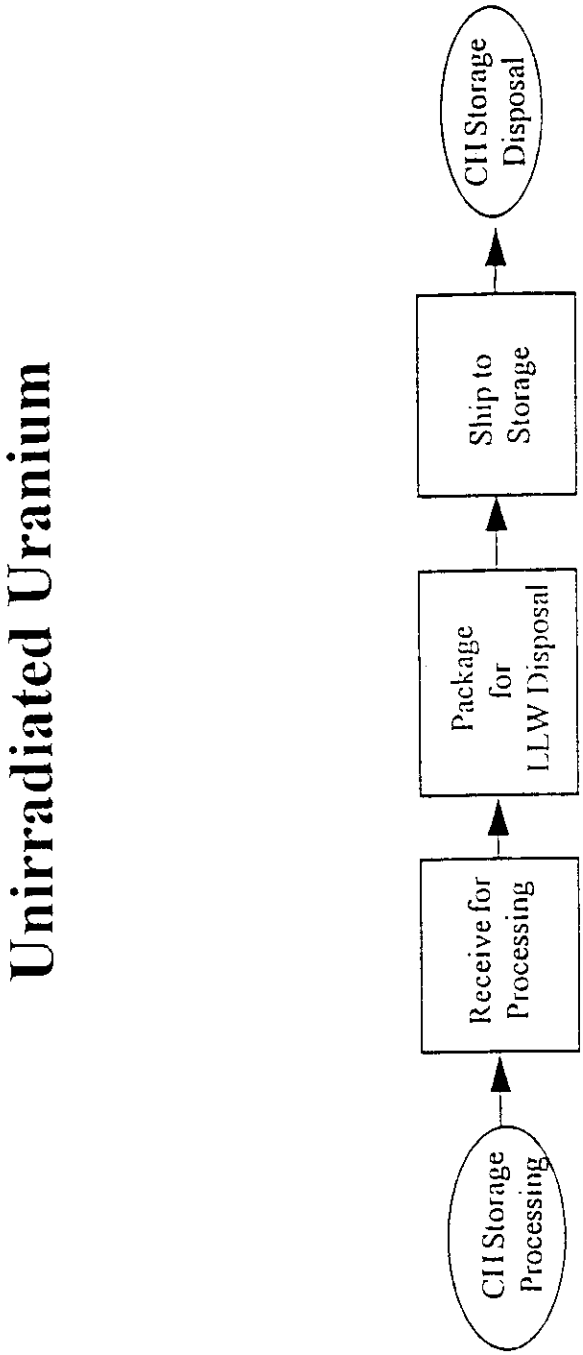


Figure A.5-10. Alternative 4 Functional Flow Diagram for Miscellaneous Remote-Handled Sources.

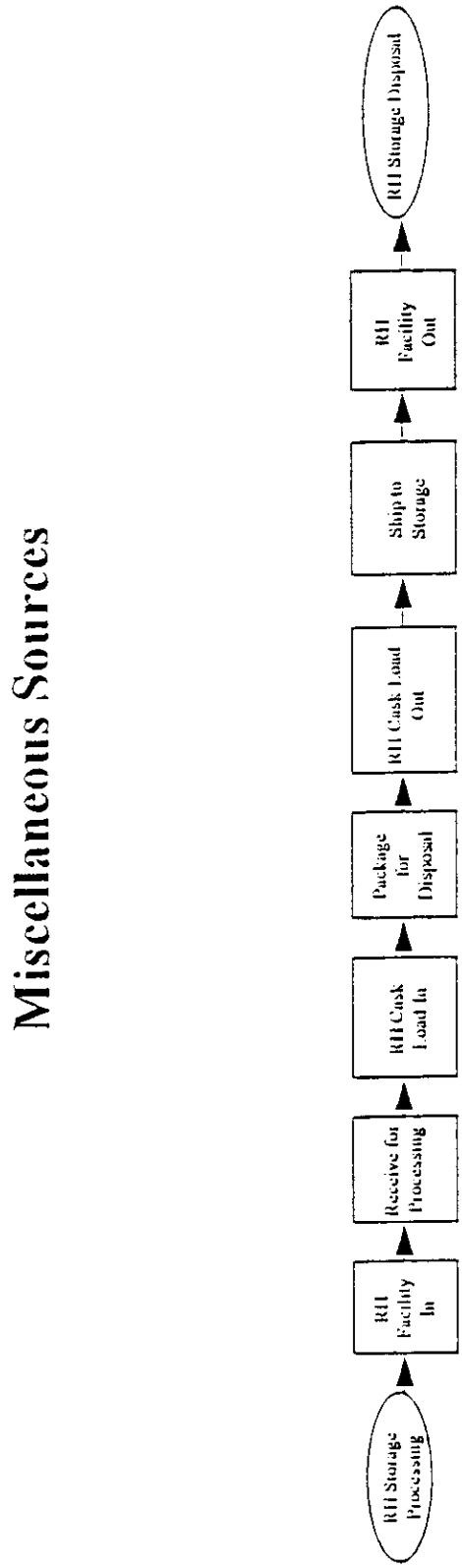
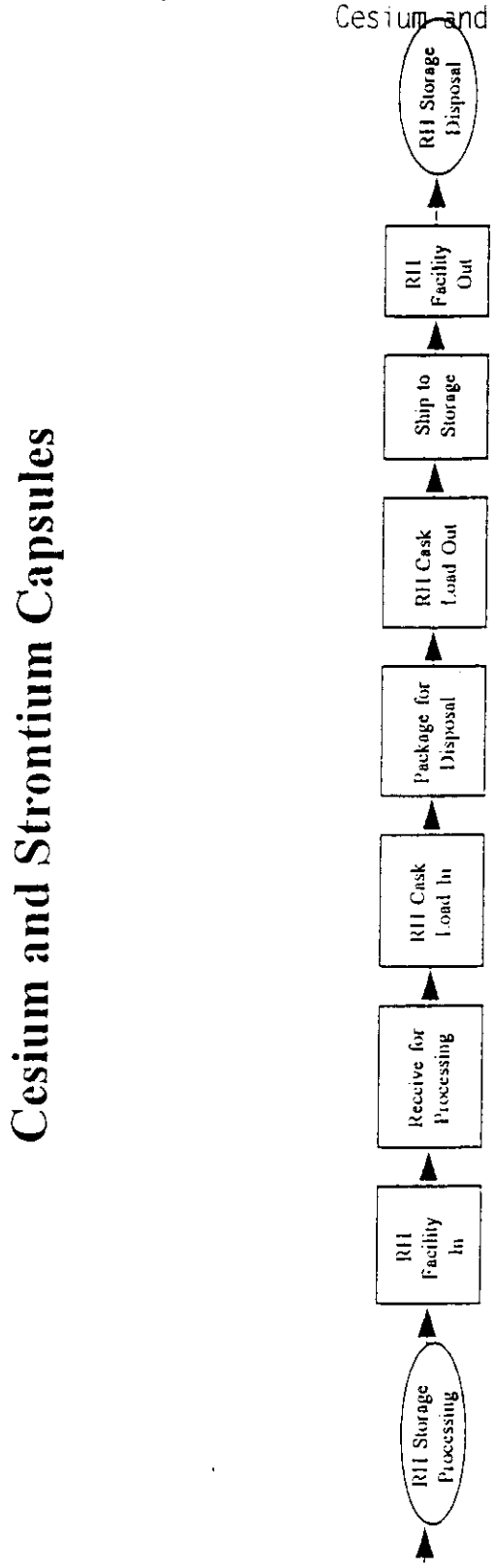


Figure A.5-11. Alternative 4 Functional Flow Diagram for Cesium and Strontium Capsules.



A.5.3 Model Throughput Results for Alternative 4

Table A.5-1 shows the annual throughput results in cubic meters for each function shown in the functional flow diagrams for Alternative 4.

A.5.4 Model Storage Results for Alternative 4

Table A.5-2 shows the annual storage results in cubic meters for each storage facility for Alternative 4.

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CANISTERS	ENTERING.THE.SYSTEM											
CH_LLMW	ENTERING.THE.SYSTEM	725.27	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90
CH_LLMW	FACILITY.1.RECEIVING											
CH_LLMW	FACILITY.1.SHIPPING											
CH_LLMW	FACILITY.LLMW.DISPOSAL											
CH_LLMW	FACILITY.TTF											
CH_LLMW	FACILITY.WRAP.2A											
CH_LLMW	LLMW.PROCESSING											
CH_LLMW	PACKAGE.FOR.TREATMENT											
CH_LLMW	RECEIVE.FOR.PROCESSING											
CH_LLMW	REMOVE.CONTAINER											
CH_LLMW	REMOVE.OVERPACK											
CH_LLMW	RH.CASK.LOAD.IN											
CH_LLMW	RH.CASK.LOAD.OUT											
CH_LLMW	SHIP.TO.STORAGE											
CH_LLMW	SIZE.REDUCE											
CH_LLMW	SORT											
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL											
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL											
CH_LLMW	TTF.THERMAL.TREATMENT											
CH_LLMW	W2A.GROUT.STABILIZATION											
CH_LLMW	W2A.LEAD.ENCAPSULATION											
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL											
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION											
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL											
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	50.20	2.10	2.30	32.90	32.90	94.08	48.19	45.90	137.68	168.28	179.09
CH_LLW	ASSAY											
CH_LLW	DECON.OVERPACK											
CH_LLW	FACILITY.1.SHIPPING											
CH_LLW	FACILITY.LLW.BURIAL											
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL											
CH_LLW	SHIP.FOR.REUSE											
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND											
CH_LLW	SHRED.CONTAINER											
CH_LLW_GTCIII	ENTERING.THE.SYSTEM								283.30	849.90	1416.40	2549.60
CH_TRU	ASSAY											
CH_TRU	DECON.OVERPACK											
CH_TRU	ENTERING.THE.SYSTEM	178.94	138.76	110.81	12.68	12.57	37.04	215.65	6.73	43.73	55.97	38.17
CH_TRU	FACILITY.1.RECEIVING											
CH_TRU	FACILITY.1.SHIPPING											
CH_TRU	FACILITY.WIPP											
CH_TRU	FACILITY.WRAP.1											

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CANISTERS	ENTERING.THE.SYSTEM						451.00	451.00	451.00	451.00	451.00	451.00
CH_LLMW	ENTERING.THE.SYSTEM	21.90	47.48	21.90	21.90	21.90	47.51	21.90	21.90	21.90	47.52	21.90
CH_LLMW	FACILITY.1.RECEIVING		204.89	440.66	308.62	515.17	625.70	439.55	468.18	327.18	384.52	96.78
CH_LLMW	FACILITY.1.SHIPPING		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	FACILITY.LLMW.DISPOSAL		232.41	256.00	272.53	277.09	313.66	256.31	205.34	116.54	164.10	131.37
CH_LLMW	FACILITY.TTF						0.90				0.45	
CH_LLMW	FACILITY.WRAP.2A		116.21	142.01	122.26	140.62	156.74	140.08	89.99	59.02	82.01	65.68
CH_LLMW	LLMW.PROCESSING		165.91	248.69	128.62	236.45	236.31	169.84	111.73	93.18	171.78	33.78
CH_LLMW	PACKAGE.FOR.TREATMENT		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	RECEIVE.FOR.PROCESSING		165.91	248.69	128.62	236.45	236.31	169.84	111.73	93.18	171.78	33.78
CH_LLMW	REMOVE.CONTAINER		165.91	248.69	128.62	236.45	236.31	169.84	111.73	93.18	171.78	33.78
CH_LLMW	REMOVE.OVERPACK		38.97	191.97	171.00	287.71	389.39	269.71	356.45	225.00	221.74	54.00
CH_LLMW	RH.CASK.LOAD.IN		165.91	248.69	128.62	236.45	236.31	169.84	111.73	93.18	171.78	33.78
CH_LLMW	RH.CASK.LOAD.OUT		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	SHIP.TO.STORAGE		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	SIZE.REDUCE		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	SORT		116.21	174.18	90.08	165.61	165.51	118.95	78.26	65.26	120.32	23.66
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL						0.18				0.09	
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL						0.18				0.09	
CH_LLMW	TTF.THERMAL.TREATMENT						0.90				0.45	
CH_LLMW	W2A.GROUT.STABILIZATION		114.73	112.06	104.62	89.37	78.40	71.37	32.01	15.34	32.38	57.36
CH_LLMW	W2A.LEAD.ENCAPSULATION		1.48									
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL		229.45	256.00	272.53	277.09	313.48	256.31	205.34	116.54	164.01	131.37
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION			15.93	31.65	49.17	78.34	56.78	70.66	42.93	49.62	8.32
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL		232.41	256.00	272.53	277.09	313.48	256.31	205.34	116.54	164.01	131.37
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	148.49	205.09	205.09	220.39	220.39	135.49	107.09	77.69	251.47	248.67	248.67
CH_LLW	ASSAY		846.60	777.37	783.66	616.65	548.46	472.30	409.65	648.71	629.18	649.13
CH_LLW	DECON.OVERPACK		1153.38	1357.65	1410.09	1376.35	1683.32	1534.79	1410.79	1084.62	1001.72	343.71
CH_LLW	FACILITY.1.SHIPPING		2673.39	2543.01	2862.17	2659.43	2839.94	2764.98	2492.33	2339.93	2270.42	1749.69
CH_LLW	FACILITY.LLW.BURIAL		983.84	952.86	952.65	818.41	695.77	627.59	511.82	737.02	725.67	705.09
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL		491.92	476.43	476.33	409.20	347.89	313.79	255.91	368.51	362.83	352.54
CH_LLW	SHIP.FOR.REUSE		5325.73	5571.78	5551.31	6096.53	6713.30	7124.29	7665.61	6747.73	6773.90	7129.15
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND		983.84	952.86	952.65	818.41	695.77	627.59	511.82	737.02	725.67	705.09
CH_LLW	SHRED.CONTAINER		4919.17	4764.31	4763.26	4092.05	3478.87	3137.93	2559.08	3685.08	3628.34	3525.45
CH_LLW_GTCIII	ENTERING.THE.SYSTEM	3399.40	5382.40	7365.40	7082.20	6515.60	2266.30	1416.40	708.20	946.61	238.41	238.41
CH_TRU	ASSAY		176.98	155.92	133.60	92.85	104.06	83.73	35.65	817.11	789.77	725.41
CH_TRU	DECON.OVERPACK		142.03		10.71	142.03	21.43	50.91	91.11	10.71	50.91	
CH_TRU	ENTERING.THE.SYSTEM	36.14	36.14	36.14	42.26	42.26	33.76	33.76	27.64	976.29	973.46	985.41
CH_TRU	FACILITY.1.RECEIVING		176.98	155.92	133.60	92.85	104.06	83.73	35.65	817.11	789.77	725.41
CH_TRU	FACILITY.1.SHIPPING		695.73	542.85	580.22	604.94	560.80	556.10	496.77	843.11	847.30	579.99
CH_TRU	FACILITY.WIPP		543.61	552.94	559.41	473.01	529.27	515.28	381.66	856.39	762.57	603.71
CH_TRU	FACILITY.WRAP.1		553.71	542.85	569.51	462.91	539.37	505.18	405.66	832.39	774.57	601.81

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00
CH_LLMW	ENTERING.THE.SYSTEM	21.90	21.90	118.48	92.90	21.90	21.90	47.51	21.90			
CH_LLMW	FACILITY.1.RECEIVING	153.67	74.84	477.42	322.13	585.59	199.57	315.88	352.59			
CH_LLMW	FACILITY.1.SHIPPING	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	FACILITY.LLMW.DISPOSAL	82.10	67.02	284.71	260.35	259.77	293.26	174.94	252.87			
CH_LLMW	FACILITY.TTF			0.45				0.45				
CH_LLMW	FACILITY.WRAP.2A	52.98	33.51	130.38	142.10	117.96	146.63	86.68	125.11			
CH_LLMW	LLMW.PROCESSING	72.67	47.84	240.45	175.18	244.66	113.11	121.42	175.65			
CH_LLMW	PACKAGE.FOR.TREATMENT	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	RECEIVE.FOR.PROCESSING	72.67	47.84	240.45	175.18	244.66	113.11	121.42	175.65			
CH_LLMW	REMOVE.CONTAINER	72.67	47.84	240.45	175.18	244.66	113.11	121.42	175.65			
CH_LLMW	REMOVE.OVERPACK	90.00	27.00	236.97	146.96	340.94	86.45	185.45	185.94			
CH_LLMW	RH.CASK.LOAD.IN	72.67	47.84	240.45	175.18	244.66	113.11	121.42	175.65			
CH_LLMW	RH.CASK.LOAD.OUT	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	SHIP.TO.STORAGE	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	SIZE.REDUCE	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	SORT	50.90	33.51	168.41	122.69	171.36	79.23	85.05	123.03			
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.09				0.09				
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.09				0.09				
CH_LLMW	TTF.THERMAL.TREATMENT			0.45				0.45				
CH_LLMW	W2A.GROUT.STABILIZATION	14.01	29.35	96.10	66.40	71.37	71.37	33.71	46.02			
CH_LLMW	W2A.LEAD.ENCAPSULATION											
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL	82.10	67.02	284.62	260.35	259.77	293.26	174.85	252.87			
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION	27.04	4.16	46.21	63.78	58.51	75.26	53.71	80.42			
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL	82.10	67.02	284.62	260.35	259.77	293.26	174.85	252.87			
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM	233.37	233.37	218.07	218.07	202.78	202.78	202.78	2.30			
CH_LLW	ASSAY	595.08	653.60	786.49	861.79	879.55	931.41	919.57	435.55			
CH_LLW	DECON.OVERPACK	94.47	86.43	624.78	417.22	887.09	182.23	577.90	432.11			
CH_LLW	FACILITY.1.SHIPPING	1511.16	1433.13	2092.33	1985.34	2349.94	1842.28	2167.88	1637.54			
CH_LLW	FACILITY.LLW.BURIAL	689.49	728.39	988.77	995.34	1043.83	1043.85	1050.90	555.28			
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL	344.74	364.20	494.39	497.67	521.92	521.92	525.45	277.64			
CH_LLW	SHIP.FOR.REUSE	7260.74	7038.63	5611.36	5597.80	5172.67	5472.24	5254.21	7048.69			
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND	689.49	728.39	988.77	995.34	1043.83	1043.85	1050.90	555.28			
CH_LLW	SHRED.CONTAINER	3447.43	3641.96	4943.87	4976.69	5219.16	5219.23	5254.52	2776.39			
CH_LLW_GTCIII	ENTERING.THE.SYSTEM	238.41	238.41	238.41	238.41	238.41	238.41	238.41				
CH_TRU	ASSAY	893.05	821.69	1032.69	941.22	1067.06	1235.76	1084.96	705.96			
CH_TRU	DECON.OVERPACK			40.20	10.71	91.11		50.91	50.91			
CH_TRU	ENTERING.THE.SYSTEM	979.29	981.69	973.17	973.18	967.06	967.06	967.06	14.68			
CH_TRU	FACILITY.1.RECEIVING	893.05	821.69	1032.69	941.22	1067.06	1235.76	1084.96	705.96			
CH_TRU	FACILITY.1.SHIPPING	616.37	563.40	910.20	740.16	1015.83	880.70	973.23	630.44			
CH_TRU	FACILITY.WIPP	626.47	563.40	846.00	716.03	797.53	686.80	783.22	1077.12			
CH_TRU	FACILITY.WRAP.1	616.37	563.40	858.00	741.45	810.42	768.90	783.22	944.72			

Table A.5-1

Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	8569.00
CH_LLMW	ENTERING.THE.SYSTEM			1630.39
CH_LLMW	FACILITY.1.RECEIVING			6292.93
CH_LLMW	FACILITY.1.SHIPPING			1952.21
CH_LLMW	FACILITY.LLMW.DISPOSAL			3900.37
CH_LLMW	FACILITY.TTF			2.24
CH_LLMW	FACILITY.WRAP.2A			1949.96
CH_LLMW	LLMW.PROCESSING			2787.27
CH_LLMW	PACKAGE.FOR.TREATMENT			1952.21
CH_LLMW	RECEIVE.FOR.PROCESSING			2787.27
CH_LLMW	REMOVE.CONTAINER			2787.27
CH_LLMW	REMOVE.OVERPACK			3505.67
CH_LLMW	RH.CASK.LOAD.IN			2787.27
CH_LLMW	RH.CASK.LOAD.OUT			1952.21
CH_LLMW	SHIP.TO.STORAGE			1952.21
CH_LLMW	SIZE.REDUCE			1952.21
CH_LLMW	SORT			1952.21
CH_LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.45
CH_LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.45
CH_LLMW	TTF.THERMAL.TREATMENT			2.24
CH_LLMW	W2A.GROUT.STABILIZATION			1135.97
CH_LLMW	W2A.LEAD.ENCAPSULATION			1.48
CH_LLMW	W2A.PACKAGE.FOR.DISPOSAL			3896.96
CH_LLMW	W2A.POLYETHYLENE.EXTRUSION			812.51
CH_LLMW	W2A.SHIP.TO.LLMW.DISPOSAL			3899.92
CH_LLMW_GTCIII	ENTERING.THE.SYSTEM			4375.65
CH_LLW	ASSAY			12444.75
CH_LLW	DECON.OVERPACK			15658.64
CH_LLW	FACILITY.1.SHIPPING			40214.91
CH_LLW	FACILITY.LLW.BURIAL			14806.56
CH_LLW	PACKAGE.FOR.LLW.DISPOSAL			7403.28
CH_LLW	SHIP.FOR.REUSE			113155.67
CH_LLW	SHIP.TO.LLW.BURIAL.GROUND			14806.56
CH_LLW	SHRED.CONTAINER			74032.79
CH_LLW_GTCIII	ENTERING.THE.SYSTEM			42327.43
CH_TRU	ASSAY			10897.47
CH_TRU	DECON.OVERPACK			763.70
CH_TRU	ENTERING.THE.SYSTEM			10897.46
CH_TRU	FACILITY.1.RECEIVING			10897.47
CH_TRU	FACILITY.1.SHIPPING			12638.13
CH_TRU	FACILITY.WIPP			11874.43
CH_TRU	FACILITY.WRAP.1			11874.43

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CH_TRU	PACKAGE.FOR.TREATMENT											
CH_TRU	RECEIVE.FOR.PROCESSING											
CH_TRU	REMOVE.CONTAINER											
CH_TRU	RESTRICTED.WASTE.MANAGEMENT											
CH_TRU	SHIP.FOR.REUSE											
CH_TRU	SHIP.TO.STORAGE											
CH_TRU	SIZE.REDUCE											
CH_TRU	SORT											
CH_TRU	W1.ASSAY											
CH_TRU	W1.SHIP.TO.STORAGE											
CH_TRU_SUSPECT	ASSAY											
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM							519.33	519.36	519.36	519.36	519.36
CH_TRU_SUSPECT	FACILITY.1.RECEIVING											
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING											
CH_TRU_SUSPECT	RECEIVE.OVERPACK											
CH_TRU_SUSPECT	REMOVE.OVERPACK											
CH_TRUM	ASSAY											
CH_TRUM	ENTERING.THE.SYSTEM	0.72	0.40	0.61	0.20	0.15	0.15	4.35	0.31	0.31	0.31	0.96
CH_TRUM	FACILITY.1.RECEIVING											
CH_TRUM	FACILITY.1.SHIPPING											
CH_TRUM	FACILITY.WIPP											
CH_TRUM	FACILITY.WRAP.1											
CH_TRUM	PACKAGE.FOR.TREATMENT											
CH_TRUM	RECEIVE.FOR.PROCESSING											
CH_TRUM	REMOVE.CONTAINER											
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT											
CH_TRUM	SHIP.TO.STORAGE											
CH_TRUM	SIZE.REDUCE											
CH_TRUM	SORT											
CH_TRUM	W1.ASSAY											
CH_TRUM	W1.SHIP.TO.STORAGE											
CS_CAPSULES	ENTERING.THE.SYSTEM	2.38										
CS_CAPSULES	FACILITY.1.RECEIVING											
CS_CAPSULES	FACILITY.1.SHIPPING											
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM	15.00										
MISC_SOURCES	FACILITY.1.RECEIVING											
MISC_SOURCES	FACILITY.1.SHIPPING											

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CH_TRU	PACKAGE.FOR.TREATMENT		553.71	542.85	569.51	462.91	539.37	505.18	405.66	832.39	796.39	579.99
CH_TRU	RECEIVE.FOR.PROCESSING		176.98	155.92	133.60	92.85	104.06	83.73	35.65	817.11	789.77	725.41
CH_TRU	REMOVE.CONTAINER		732.20	761.26	771.69	675.81	804.66	750.67	612.88	1277.07	1209.98	876.88
CH_TRU	RESTRICTED.WASTE.MANAGEMENT		114.38	86.09	106.50	57.43	56.58	54.78	37.93	66.15	70.40	53.86
CH_TRU	SHIP.FOR.REUSE		142.03		10.71	142.03	21.43	50.91	91.11	10.71	50.91	
CH_TRU	SHIP.TO.STORAGE		553.71	542.85	569.51	462.91	539.37	505.18	405.66	832.39	796.39	579.99
CH_TRU	SIZE.REDUCE		336.94	370.66	356.52	363.59	426.22	407.62	329.80	700.59	655.59	472.27
CH_TRU	SORT		439.32	456.76	463.01	405.49	482.79	450.40	367.73	766.24	725.99	526.13
CH_TRU	W1.ASSAY		543.61	552.94	559.41	473.01	529.27	515.28	381.66	856.39	774.57	591.71
CH_TRU	W1.SHIP.TO.STORAGE		543.61	552.94	559.41	473.01	529.27	515.28	381.66	856.39	774.57	591.71
CH_TRU_SUSPECT	ASSAY		1979.40	2158.08	2274.84	2078.28	2497.68	2377.68	2057.88	1639.80	1498.08	540.00
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	
CH_TRU_SUSPECT	FACILITY.1.RECEIVING		1979.40	2158.08	2274.84	2078.28	2557.68	2317.68	2057.88	1639.80	1498.08	540.00
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		1979.40	2158.08	2274.84	2078.28	2497.68	2377.68	2057.88	1639.80	1498.08	540.00
CH_TRU_SUSPECT	RECEIVE.OVERPACK		1979.40	2158.08	2274.84	2078.28	2497.68	2377.68	2057.88	1639.80	1498.08	540.00
CH_TRU_SUSPECT	REMOVE.OVERPACK		1682.49	1834.37	1933.61	1766.54	2123.03	2021.03	1749.20	1393.83	1273.37	459.00
CH_TRUM	ASSAY		4.35	11.54		8.95	10.82	1.57	3.29	937.20	1117.70	1065.90
CH_TRUM	ENTERING.THE.SYSTEM	2.22	8.60	8.60	8.60	8.60	2.22	2.22	2.22	1279.42	1277.30	1277.30
CH_TRUM	FACILITY.1.RECEIVING		4.35	11.54		8.95	10.82	1.57	3.29	937.20	1117.70	1065.90
CH_TRUM	FACILITY.1.SHIPPING		5.22	13.85		10.74	12.98	1.88	3.95	562.32	670.92	644.76
CH_TRUM	FACILITY.WIPP		5.22	13.85		10.74	12.98	1.88	3.95	562.32	646.44	669.24
CH_TRUM	FACILITY.WRAP.1		5.22	13.85		10.74	12.98	1.88	3.95	562.32	658.44	657.24
CH_TRUM	PACKAGE.FOR.TREATMENT		5.22	13.85		10.74	12.98	1.88	3.95	562.32	670.92	644.76
CH_TRUM	RECEIVE.FOR.PROCESSING		4.35	11.54		8.95	10.82	1.57	3.29	937.20	1117.70	1065.90
CH_TRUM	REMOVE.CONTAINER		4.35	11.54		8.95	10.82	1.57	3.29	937.20	1117.70	1065.90
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT		2.61	6.92		5.37	6.49	0.94	1.98		0.30	5.22
CH_TRUM	SHIP.TO.STORAGE		5.22	13.85		10.74	12.98	1.88	3.95	562.32	670.92	644.76
CH_TRUM	SIZE.REDUCE									562.32	670.32	634.32
CH_TRUM	SORT		2.61	6.92		5.37	6.49	0.94	1.98	562.32	670.62	639.54
CH_TRUM	W1.ASSAY		5.22	13.85		10.74	12.98	1.88	3.95	562.32	646.44	669.24
CH_TRUM	W1.SHIP.TO.STORAGE		5.22	13.85		10.74	12.98	1.88	3.95	562.32	646.44	669.24
CS_CAPSULES	ENTERING.THE.SYSTEM											
CS_CAPSULES	FACILITY.1.RECEIVING		2.38									
CS_CAPSULES	FACILITY.1.SHIPPING		2.38									
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL		2.38									
CS_CAPSULES	RECEIVE.FOR.PROCESSING		2.38									
CS_CAPSULES	RH.CASK.LOAD.IN		2.38									
CS_CAPSULES	RH.CASK.LOAD.OUT		2.38									
CS_CAPSULES	SHIP.TO.STORAGE		2.38									
MISC_SOURCES	ENTERING.THE.SYSTEM											
MISC_SOURCES	FACILITY.1.RECEIVING		15.00									
MISC_SOURCES	FACILITY.1.SHIPPING		15.00									

Table A.5-1

Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CH_TRU	PACKAGE.FOR.TREATMENT	616.37	563.40	870.00	729.45	924.71	880.70	922.32	579.53			
CH_TRU	RECEIVE.FOR.PROCESSING	893.05	821.69	1032.69	941.22	1067.06	1235.76	1084.96	705.96			
CH_TRU	REMOVE.CONTAINER	909.88	855.35	1262.22	1098.22	1391.47	1296.99	1308.39	857.43			
CH_TRU	RESTRICTED.WASTE.MANAGEMENT	70.44	50.19	112.67	70.52	89.83	102.51	137.28	65.07			
CH_TRU	SHIP.FOR.REUSE			40.20	10.71	91.11		50.91	50.91			
CH_TRU	SHIP.TO.STORAGE	616.37	563.40	870.00	729.45	924.71	880.70	922.32	579.53			
CH_TRU	SIZE.REDUCE	475.49	463.02	644.66	588.41	745.05	687.68	647.76	449.39			
CH_TRU	SORT	545.93	513.21	757.33	658.93	834.88	778.19	785.04	514.46			
CH_TRU	W1.ASSAY	626.47	563.40	846.00	753.45	800.32	779.00	773.12	954.82			
CH_TRU	W1.SHIP.TO.STORAGE	626.47	563.40	846.00	753.45	800.32	779.00	773.12	954.82			
CH_TRU_SUSPECT	ASSAY	60.00	120.00	818.28	559.71	1156.56	218.28	796.56	540.00			
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM											
CH_TRU_SUSPECT	FACILITY.1.RECEIVING	60.00	180.00	758.28	619.71	1096.56	218.28	796.56	540.00			
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING	60.00	120.00	818.28	559.71	1156.56	218.28	796.56	540.00			
CH_TRU_SUSPECT	RECEIVE.OVERPACK	60.00	120.00	818.28	559.71	1156.56	218.28	796.56	540.00			
CH_TRU_SUSPECT	REMOVE.OVERPACK	51.00	102.00	695.54	475.75	983.08	185.54	677.08	459.00			
CH_TRUM	ASSAY	1097.30	997.30	1237.30	1319.52	1517.30	1577.30	1517.30	402.32			
CH_TRUM	ENTERING.THE.SYSTEM	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	0.10			
CH_TRUM	FACILITY.1.RECEIVING	1097.30	997.30	1237.30	1319.52	1517.30	1577.30	1517.30	402.32			
CH_TRUM	FACILITY.1.SHIPPING	658.44	598.44	742.44	793.11	910.44	946.44	910.44	242.79			
CH_TRUM	FACILITY.WIPP	658.44	598.44	718.44	769.11	802.44	754.32	814.56	686.79			
CH_TRUM	FACILITY.WRAP.1	658.44	598.44	718.44	817.11	790.44	838.44	814.44	566.79			
CH_TRUM	PACKAGE.FOR.TREATMENT	658.44	598.44	742.44	793.11	910.44	946.44	910.44	242.79			
CH_TRUM	RECEIVE.FOR.PROCESSING	1097.30	997.30	1237.30	1319.52	1517.30	1577.30	1517.30	402.32			
CH_TRUM	REMOVE.CONTAINER	1097.30	997.30	1237.30	1319.52	1517.30	1577.30	1517.30	402.32			
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT	0.06	0.06	0.06	1.39	0.06	0.06	0.06	1.39			
CH_TRUM	SHIP.TO.STORAGE	658.44	598.44	742.44	793.11	910.44	946.44	910.44	242.79			
CH_TRUM	SIZE.REDUCE	658.32	598.32	742.32	790.32	910.32	946.32	910.32	240.00			
CH_TRUM	SORT	658.38	598.38	742.38	791.71	910.38	946.38	910.38	241.39			
CH_TRUM	W1.ASSAY	658.44	598.44	718.44	817.11	790.44	826.44	826.44	566.79			
CH_TRUM	W1.SHIP.TO.STORAGE	658.44	598.44	718.44	817.11	790.44	826.44	826.44	566.79			
CS_CAPSULES	ENTERING.THE.SYSTEM											
CS_CAPSULES	FACILITY.1.RECEIVING											
CS_CAPSULES	FACILITY.1.SHIPPING											
CS_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM											
MISC_SOURCES	FACILITY.1.RECEIVING											
MISC_SOURCES	FACILITY.1.SHIPPING											

ts by Waste Class (in Cubic Meters)

	2027	2028	Total
			11874.43
			10897.47
			17453.07
NT			1402.59
			763.70
			11874.43
			9121.27
			10471.84
			11874.43
			11874.43
			23371.11
			7790.37
			23371.11
			23371.11
			23371.11
			19865.44
			12826.97
			12826.97
			12826.97
			7729.16
			7729.16
			7729.16
			7729.16
			12826.97
			12826.97
NT			32.98
			7729.16
			7663.20
			7696.18
			7729.16
			7729.16
			2.38
			2.38
			2.38
L			2.38
			2.38
			2.38
			2.38
			2.38
			15.00
			15.00
			15.00

Table A.5-1

Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	4	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CH TRU											
CH TRU											
CH TRU											
CH TRU											
CH TRU											
CH TRU	.55	1326.97	1314.47	1792.47	1466.42	1529.14	1553.87	1773.31	1976.87	2017.58	2796.99
CH TRU											
CH TRU											
CH TRU											
CH TRU											
CH TRU											
CH TRU SUSPECT											
CH TRU SUSPECT											
CH TRU SUSPECT											
CH TRU SUSPECT											
CH TRU SUSPECT											
CH TRU SUSPECT											
CH TRUM											
CH TRUM											
CH TRUM											
CH TRUM	.20							28.30	28.30	28.30	85.00
CH TRUM	.30	0.30	0.30	0.30	0.30	0.30	0.30	283.60	850.20	1416.70	2549.90
CH TRUM											
CH TRUM	.19	103.40	38.50	1.70	26.90	24.80	24.80	1.70	1.70	1.70	1.70
CH TRUM											
CH TRUM											
CH TRUM											
CH TRUM											
CH TRUM											
CS CAPSULES											
CS CAPSULES											
CS CAPSULES											
CS CAPSULES											
CS CAPSULES											
CS CAPSULES							25.33	25.33	25.33	25.33	25.33
CS CAPSULES											
CS CAPSULES											
CS CAPSULES											
MISC SOURCES											
MISC SOURCES											
MISC SOURCES											

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
MISC_SOURCES	PACKAGE.FOR.DISPOSAL		15.00									
MISC_SOURCES	RECEIVE.FOR.PROCESSING		15.00									
MISC_SOURCES	RH.CASK.LOAD.IN		15.00									
MISC_SOURCES	RH.CASK.LOAD.OUT		15.00									
MISC_SOURCES	SHIP.TO.STORAGE		15.00									
RH_LLMW	ENTERING.THE.SYSTEM	2630.96	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	5232.22	5707.17	6559.70	7167.19
RH_LLMW	FACILITY.1.RECEIVING		4176.12	4590.09	4357.91	5027.59	5068.95	5613.00	6063.49	5492.51	5559.16	6309.72
RH_LLMW	FACILITY.1.SHIPPING		1600.53	1835.41	1876.69	2102.27	1796.12	2045.21	1921.72	1721.11	1688.55	1802.90
RH_LLMW	FACILITY.LLMW.DISPOSAL		1600.53	1835.41	1876.69	2102.27	1796.12	2045.21	1921.72	1721.11	1688.55	1802.90
RH_LLMW	LLMW.PROCESSING		4156.12	4610.09	4357.91	5027.59	5068.95	5593.00	6083.49	5492.51	5539.16	6329.72
RH_LLMW	PACKAGE.FOR.DISPOSAL		1600.53	1835.41	1876.69	2102.27	1796.12	2045.21	1921.72	1721.11	1688.55	1802.90
RH_LLMW	RECEIVE.FOR.PROCESSING		4156.12	4610.09	4357.91	5027.59	5068.95	5593.00	6083.49	5492.51	5539.16	6329.72
RH_LLMW	REMOVE.CONTAINER		4156.12	4610.09	4357.91	5027.59	5068.95	5593.00	6083.49	5492.51	5539.16	6329.72
RH_LLMW	RH.CASK.LOAD.IN		4156.12	4610.09	4357.91	5027.59	5068.95	5593.00	6083.49	5492.51	5539.16	6329.72
RH_LLMW	RH.CASK.LOAD.OUT		1600.53	1835.41	1876.69	2102.27	1796.12	2045.21	1921.72	1721.11	1688.55	1802.90
RH_LLMW	SHIP.TO.LLMW.DISPOSAL		1600.53	1835.41	1876.69	2102.27	1796.12	2045.21	1921.72	1721.11	1688.55	1802.90
RH_LLMW	SIZE.REDUCE		618.23	791.74	730.53	807.01	742.13	824.88	807.46	824.67	823.45	863.73
RH_LLMW	SORT		800.26	917.70	938.34	1051.14	898.06	1022.61	960.86	860.56	844.27	901.45
RH_LLMW	STABILIZATION		800.26	917.70	938.34	1051.14	898.06	1022.61	960.86	860.56	844.27	901.45
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	85.00	141.60	141.60	141.60	141.60	56.70	28.30	14.20	64.46	61.66	61.66
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	3399.70	5382.70	7365.70	7082.50	6515.90	2266.60	1416.70	708.50	814.40	106.20	106.20
RH_TRU	ASSAY		388.74	334.20	154.41	241.14	332.75	141.57	141.09	564.58	607.75	562.54
RH_TRU	ENTERING.THE.SYSTEM	1.70	1.70	1.70	1.70	1.70	48.60	51.20	51.00	518.56	520.76	640.66
RH_TRU	FACILITY.1.RECEIVING		254.00	278.50	123.40	131.00	266.74	92.90	72.70	461.11	460.76	468.16
RH_TRU	FACILITY.1.SHIPPING		194.37	167.10	77.21	120.57	166.38	70.79	70.55	284.75	316.24	281.64
RH_TRU	FACILITY.WIPP		194.37	167.10	77.21	120.57	166.38	70.79	70.55	284.75	316.24	281.64
RH_TRU	PACKAGE.FOR.TREATMENT		194.37	167.10	77.21	120.57	166.38	70.79	70.55	284.75	316.24	281.64
RH_TRU	RECEIVE.FOR.PROCESSING		254.00	278.50	123.40	131.00	266.74	92.90	72.70	461.11	460.76	468.16
RH_TRU	REMOVE.CONTAINER		323.95	278.50	128.68	200.95	277.29	117.98	117.58	466.39	485.84	468.16
RH_TRU	RESTRICTED.WASTE.MANAGEMENT									4.92	24.74	0.74
RH_TRU	RH.CASK.LOAD.IN		254.00	278.50	123.40	131.00	266.74	92.90	72.70	461.11	460.76	468.16
RH_TRU	RH.CASK.LOAD.OUT		194.37	167.10	77.21	120.57	166.38	70.79	70.55	284.75	316.24	281.64
RH_TRU	SHIP.TO.STORAGE		194.37	167.10	77.21	120.57	166.38	70.79	70.55	284.75	316.24	281.64
RH_TRU	SIZE.REDUCE		140.40	132.00	72.00	72.00	124.86	33.44	33.45	251.70	228.63	256.15
RH_TRU	SORT		194.37	167.10	77.21	120.57	166.38	70.79	70.55	279.83	291.50	280.90
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	
RH_TRU_SUSPECT	FACILITY.1.RECEIVING		211.98		15.99	211.98	31.98	75.99	135.99	15.99	75.99	
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		211.98		15.99	211.98	31.98	75.99	135.99	15.99	75.99	
RH_TRU_SUSPECT	RECEIVE.OVERPACK		211.98		15.99	211.98	31.98	75.99	135.99	15.99	75.99	
RH_TRU_SUSPECT	REMOVE.OVERPACK		211.98		15.99	211.98	31.98	75.99	135.99	15.99	75.99	
RH_TRU_SUSPECT	RH.CASK.LOAD.IN		211.98		15.99	211.98	31.98	75.99	135.99	15.99	75.99	
RH_TRUM	ASSAY		693.63	458.40	576.99	684.15	584.27	553.43	395.21	536.96	529.01	833.60

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
MISC_SOURCES	PACKAGE.FOR.DISPOSAL											
MISC_SOURCES	RECEIVE.FOR.PROCESSING											
MISC_SOURCES	RH.CASK.LOAD.IN											
MISC_SOURCES	RH.CASK.LOAD.OUT											
MISC_SOURCES	SHIP.TO.STORAGE											
RH_LLMW	ENTERING.THE.SYSTEM	7430.34	7574.30	3148.90	2735.63	2419.13	2688.92	3018.21	2827.36			
RH_LLMW	FACILITY.1.RECEIVING	6857.56	6639.14	5298.48	5079.90	4443.02	5142.38	4652.06	6388.73			
RH_LLMW	FACILITY.1.SHIPPING	2102.73	1974.90	2160.84	1794.59	1734.97	1749.45	1741.57	2022.70			
RH_LLMW	FACILITY.LLMW.DISPOSAL	2102.73	1974.90	2160.84	1794.59	1734.97	1749.45	1741.57	2022.70			
RH_LLMW	LLMW.PROCESSING	6837.56	6659.14	5278.48	5099.90	4443.02	5122.38	4672.06	6388.73			
RH_LLMW	PACKAGE.FOR.DISPOSAL	2102.73	1974.90	2160.84	1794.59	1734.97	1749.45	1741.57	2022.70			
RH_LLMW	RECEIVE.FOR.PROCESSING	6837.56	6659.14	5278.48	5099.90	4443.02	5122.38	4672.06	6388.73			
RH_LLMW	REMOVE.CONTAINER	6837.56	6659.14	5278.48	5099.90	4443.02	5122.38	4672.06	6388.73			
RH_LLMW	RH.CASK.LOAD.IN	6837.56	6659.14	5278.48	5099.90	4443.02	5122.38	4672.06	6388.73			
RH_LLMW	RH.CASK.LOAD.OUT	2102.73	1974.90	2160.84	1794.59	1734.97	1749.45	1741.57	2022.70			
RH_LLMW	SHIP.TO.LLMW.DISPOSAL	2102.73	1974.90	2160.84	1794.59	1734.97	1749.45	1741.57	2022.70			
RH_LLMW	SIZE.REDUCE	1030.66	952.62	826.78	816.31	804.64	823.06	793.92	926.13			
RH_LLMW	SORT	1051.37	987.45	1080.42	897.30	867.48	874.72	870.78	1011.35			
RH_LLMW	STABILIZATION	1051.37	987.45	1080.42	897.30	867.48	874.72	870.78	1011.35			
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	61.66	61.66	61.66	61.66	61.66	61.66	61.66				
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	106.20	106.20	106.20	106.20	106.20	106.20	106.20	0.30			
RH_TRU	ASSAY	653.23	757.53	876.37	1009.35	808.63	1149.76	712.87	429.52			
RH_TRU	ENTERING.THE.SYSTEM	643.26	640.66	831.36	793.76	586.36	520.76	518.36	51.00			
RH_TRU	FACILITY.1.RECEIVING	533.74	620.66	699.89	825.23	628.36	928.14	558.36	332.24			
RH_TRU	FACILITY.1.SHIPPING	332.99	385.14	444.56	511.05	404.69	592.88	362.81	215.13			
RH_TRU	FACILITY.WIPP	332.99	385.14	444.56	499.05	404.69	521.30	374.39	287.13			
RH_TRU	PACKAGE.FOR.TREATMENT	332.99	385.14	444.56	511.05	404.69	592.88	362.81	215.13			
RH_TRU	RECEIVE.FOR.PROCESSING	533.74	620.66	699.89	825.23	628.36	928.14	558.36	332.24			
RH_TRU	REMOVE.CONTAINER	533.74	620.66	719.69	830.50	673.24	928.14	583.43	357.32			
RH_TRU	RESTRICTED.WASTE.MANAGEMENT	12.74	12.74	12.74	12.74	0.74	36.00	12.74	0.74			
RH_TRU	RH.CASK.LOAD.IN	533.74	620.66	699.89	825.23	628.36	928.14	558.36	332.24			
RH_TRU	RH.CASK.LOAD.OUT	332.99	385.14	444.56	511.05	404.69	592.88	362.81	215.13			
RH_TRU	SHIP.TO.STORAGE	332.99	385.14	444.56	511.05	404.69	592.88	362.81	215.13			
RH_TRU	SIZE.REDUCE	276.00	316.15	275.19	312.63	300.00	413.38	287.58	141.45			
RH_TRU	SORT	320.24	372.39	431.81	498.30	403.94	556.88	350.06	214.39			
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM											
RH_TRU_SUSPECT	FACILITY.1.RECEIVING			60.00	15.99	135.99		75.99	75.99			
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			60.00	15.99	135.99		75.99	75.99			
RH_TRU_SUSPECT	RECEIVE.OVERPACK			60.00	15.99	135.99		75.99	75.99			
RH_TRU_SUSPECT	REMOVE.OVERPACK			60.00	15.99	135.99		75.99	75.99			
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			60.00	15.99	135.99		75.99	75.99			
RH_TRUM	ASSAY	695.67	741.81	682.60	767.19	719.30	861.19	739.67	468.59			

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
MISC_SOURCES	PACKAGE.FOR.DISPOSAL			15.00
MISC_SOURCES	RECEIVE.FOR.PROCESSING			15.00
MISC_SOURCES	RH.CASK.LOAD.IN			15.00
MISC_SOURCES	RH.CASK.LOAD.OUT			15.00
MISC_SOURCES	SHIP.TO.STORAGE			15.00
RH_LLMW	ENTERING.THE.SYSTEM			96759.81
RH_LLMW	FACILITY.1.RECEIVING			96759.81
RH_LLMW	FACILITY.1.SHIPPING			33672.27
RH_LLMW	FACILITY.LLMW.DISPOSAL			33672.27
RH_LLMW	LLMW.PROCESSING			96759.81
RH_LLMW	PACKAGE.FOR.DISPOSAL			33672.27
RH_LLMW	RECEIVE.FOR.PROCESSING			96759.81
RH_LLMW	REMOVE.CONTAINER			96759.81
RH_LLMW	RH.CASK.LOAD.IN			96759.81
RH_LLMW	RH.CASK.LOAD.OUT			33672.27
RH_LLMW	SHIP.TO.LLMW.DISPOSAL			33672.27
RH_LLMW	SIZE.REDUCE			14807.96
RH_LLMW	SORT			16836.13
RH_LLMW	STABILIZATION			16836.13
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM			1554.05
RH_LLW_GTCIII	ENTERING.THE.SYSTEM			41035.30
RH_TRU	ASSAY			9866.04
RH_TRU	ENTERING.THE.SYSTEM			7735.87
RH_TRU	FACILITY.1.RECEIVING			7735.87
RH_TRU	FACILITY.1.SHIPPING			4998.83
RH_TRU	FACILITY.WIPP			4998.83
RH_TRU	PACKAGE.FOR.TREATMENT			4998.83
RH_TRU	RECEIVE.FOR.PROCESSING			7735.87
RH_TRU	REMOVE.CONTAINER			8112.02
RH_TRU	RESTRICTED.WASTE.MANAGEMENT			131.62
RH_TRU	RH.CASK.LOAD.IN			7735.87
RH_TRU	RH.CASK.LOAD.OUT			4998.83
RH_TRU	SHIP.TO.STORAGE			4998.83
RH_TRU	SIZE.REDUCE			3667.01
RH_TRU	SORT			4867.21
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM			379.95
RH_TRU_SUSPECT	FACILITY.1.RECEIVING			1139.85
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			1139.85
RH_TRU_SUSPECT	RECEIVE.OVERPACK			1139.85
RH_TRU_SUSPECT	REMOVE.OVERPACK			1139.85
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			1139.85
RH_TRUM	ASSAY			11521.66

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
RH TRUM	ENTERING.THE.SYSTEM	448.47	124.40	124.40	167.68	149.59	158.64	167.68	178.68	201.30	205.82	4067.41
RH TRUM	FACILITY.1.RECEIVING											
RH TRUM	FACILITY.1.SHIPPING											
RH TRUM	FACILITY.WIPP											
RH TRUM	PACKAGE.FOR.TREATMENT											
RH TRUM	RECEIVE.FOR.PROCESSING											
RH TRUM	REMOVE.CONTAINER											
RH TRUM	REMOVE.PB.SHIELDING											
RH TRUM	RESTRICTED.WASTE.MANAGEMENT											
RH TRUM	RH.CASK.LOAD.IN											
RH TRUM	RH.CASK.LOAD.OUT											
RH TRUM	SHIP.TO.STORAGE											
RH TRUM	SIZE.REDUCE											
RH TRUM	SORT											
SODIUM	ENTERING.THE.SYSTEM											
SR CAPSULES	ENTERING.THE.SYSTEM	1.12										
SR CAPSULES	FACILITY.1.RECEIVING											
SR CAPSULES	FACILITY.1.SHIPPING											
SR CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
SR CAPSULES	RECEIVE.FOR.PROCESSING											
SR CAPSULES	RH.CASK.LOAD.IN											
SR CAPSULES	RH.CASK.LOAD.OUT											
SR CAPSULES	SHIP.TO.STORAGE											
UNIRRAD UR	ENTERING.THE.SYSTEM	12.02	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04
UNIRRAD UR	FACILITY.1.RECEIVING											
UNIRRAD UR	FACILITY.1.SHIPPING											
UNIRRAD UR	PACKAGE.FOR.LLW.DISPOSAL											
UNIRRAD UR	RECEIVE.FOR.PROCESSING											
UNIRRAD UR	SHIP.TO.STORAGE											

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
RH_TRUM	ENTERING.THE.SYSTEM	7736.54	7704.87	366.62	324.75	346.20	444.20	527.55	634.19	1004.52	1064.49	1259.17
RH_TRUM	FACILITY.1.RECEIVING		3708.59	3088.04	3497.26	2682.13	2090.32	2093.80	1904.14	1061.11	875.34	1535.47
RH_TRUM	FACILITY.1.SHIPPING		346.81	229.20	290.41	343.35	295.32	282.45	198.24	269.11	264.50	416.80
RH_TRUM	FACILITY.WIPP		346.81	229.20	290.41	343.35	295.32	282.45	198.24	269.11	264.50	416.80
RH_TRUM	PACKAGE.FOR.TREATMENT		346.81	229.20	290.41	343.35	295.32	282.45	198.24	269.11	264.50	416.80
RH_TRUM	RECEIVE.FOR.PROCESSING		3708.59	3068.04	3517.26	2662.13	2110.32	2093.80	1884.14	1081.11	875.34	1535.47
RH_TRUM	REMOVE.CONTAINER		1007.04	568.04	877.26	939.80	850.32	933.80	784.14	861.11	875.34	1255.47
RH_TRUM	REMOVE.PB.SHIELDING		2701.55	2500.00	2640.00	1722.33	1260.00	1160.00	1100.00	220.00		280.00
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT				3.83	2.55	6.37	11.47	1.27	1.27		
RH_TRUM	RH.CASK.LOAD.IN		3708.59	3068.04	3517.26	2662.13	2110.32	2093.80	1884.14	1081.11	875.34	1535.47
RH_TRUM	RH.CASK.LOAD.OUT		346.81	229.20	290.41	343.35	295.32	282.45	198.24	269.11	264.50	416.80
RH_TRUM	SHIP.TO.STORAGE		346.81	229.20	290.41	343.35	295.32	282.45	198.24	269.11	264.50	416.80
RH_TRUM	SIZE.REDUCE		282.55	183.86	241.00	285.99	222.58	216.20	125.71	240.94	254.46	398.34
RH_TRUM	SORT		346.81	229.20	286.58	340.80	288.95	270.98	196.97	267.84	264.50	416.80
SODIUM	ENTERING.THE.SYSTEM				177.00							
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.1.RECEIVING											
SR_CAPSULES	FACILITY.1.SHIPPING											
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL											
SR_CAPSULES	RECEIVE.FOR.PROCESSING											
SR_CAPSULES	RH.CASK.LOAD.IN											
SR_CAPSULES	RH.CASK.LOAD.OUT											
SR_CAPSULES	SHIP.TO.STORAGE											
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.04										
UNIRRAD_UR	FACILITY.1.RECEIVING		24.08	36.12	24.08	12.04		24.08				
UNIRRAD_UR	FACILITY.1.SHIPPING		24.08	36.12	24.08	12.04		24.08				
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL		24.08	36.12	24.08	12.04		24.08				
UNIRRAD_UR	RECEIVE.FOR.PROCESSING		24.08	36.12	24.08	12.04		24.08				
UNIRRAD_UR	SHIP.TO.STORAGE		24.08	36.12	24.08	12.04		24.08				

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
RH_TRUM	ENTERING.THE.SYSTEM	1281.59	1304.40	673.15	643.61	605.30	641.49	675.27	347.85			
RH_TRUM	FACILITY.1.RECEIVING	1161.59	1412.91	1191.92	1633.39	1254.69	1450.70	1727.73	1210.70			
RH_TRUM	FACILITY.1.SHIPPING	347.83	370.91	341.30	386.15	359.65	430.59	369.83	234.29			
RH_TRUM	FACILITY.WIPP	347.83	370.91	341.30	374.15	359.65	392.21	389.02	265.48			
RH_TRUM	PACKAGE.FOR.TREATMENT	347.83	370.91	341.30	386.15	359.65	430.59	369.83	234.29			
RH_TRUM	RECEIVE.FOR.PROCESSING	1161.59	1412.91	1191.92	1633.39	1234.69	1470.70	1727.73	1210.70			
RH_TRUM	REMOVE.CONTAINER	1161.59	1112.91	951.92	1093.39	934.69	1210.70	1047.73	910.70			
RH_TRUM	REMOVE.PB.SHIELDING		300.00	240.00	540.00	300.00	260.00	680.00	300.00			
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT				5.10							
RH_TRUM	RH.CASK.LOAD.IN	1161.59	1412.91	1191.92	1633.39	1234.69	1470.70	1727.73	1210.70			
RH_TRUM	RH.CASK.LOAD.OUT	347.83	370.91	341.30	386.15	359.65	430.59	369.83	234.29			
RH_TRUM	SHIP.TO.STORAGE	347.83	370.91	341.30	386.15	359.65	430.59	369.83	234.29			
RH_TRUM	SIZE.REDUCE	305.50	352.45	296.20	342.03	335.65	408.67	350.00	202.20			
RH_TRUM	SORT	347.83	370.91	341.30	381.05	359.65	430.59	369.83	234.29			
SODIUM	ENTERING.THE.SYSTEM											
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.1.RECEIVING	1.12										
SR_CAPSULES	FACILITY.1.SHIPPING	1.12										
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL	1.12										
SR_CAPSULES	RECEIVE.FOR.PROCESSING	1.12										
SR_CAPSULES	RH.CASK.LOAD.IN	1.12										
SR_CAPSULES	RH.CASK.LOAD.OUT	1.12										
SR_CAPSULES	SHIP.TO.STORAGE	1.12										
UNIRRAD_UR	ENTERING.THE.SYSTEM											
UNIRRAD_UR	FACILITY.1.RECEIVING						12.04	12.02				
UNIRRAD_UR	FACILITY.1.SHIPPING						12.04	12.02				
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL						12.04	12.02				
UNIRRAD_UR	RECEIVE.FOR.PROCESSING						12.04	12.02				
UNIRRAD_UR	SHIP.TO.STORAGE						12.04	12.02				

Table A.5-1
Alternative 4 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
RH_TRUM	ENTERING.THE.SYSTEM			33579.83
RH_TRUM	FACILITY.1.RECEIVING			33579.82
RH_TRUM	FACILITY.1.SHIPPING			5776.76
RH_TRUM	FACILITY.WIPP			5776.76
RH_TRUM	PACKAGE.FOR.TREATMENT			5776.76
RH_TRUM	RECEIVE.FOR.PROCESSING			33579.82
RH_TRUM	REMOVE.CONTAINER			17375.94
RH_TRUM	REMOVE.PB.SHIELDING			16203.88
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT			31.86
RH_TRUM	RH.CASK.LOAD.IN			33579.82
RH_TRUM	RH.CASK.LOAD.OUT			5776.76
RH_TRUM	SHIP.TO.STORAGE			5776.76
RH_TRUM	SIZE.REDUCE			5044.33
RH_TRUM	SORT			5744.90
SODIUM	ENTERING.THE.SYSTEM			177.00
SR_CAPSULES	ENTERING.THE.SYSTEM			1.12
SR_CAPSULES	FACILITY.1.RECEIVING			1.12
SR_CAPSULES	FACILITY.1.SHIPPING			1.12
SR_CAPSULES	PACKAGE.GEOLOGICAL.DISPOSAL			1.12
SR_CAPSULES	RECEIVE.FOR.PROCESSING			1.12
SR_CAPSULES	RH.CASK.LOAD.IN			1.12
SR_CAPSULES	RH.CASK.LOAD.OUT			1.12
SR_CAPSULES	SHIP.TO.STORAGE			1.12
UNIRRAD_UR	ENTERING.THE.SYSTEM			144.46
UNIRRAD_UR	FACILITY.1.RECEIVING			144.46
UNIRRAD_UR	FACILITY.1.SHIPPING			144.46
UNIRRAD_UR	PACKAGE.FOR.LLW.DISPOSAL			144.46
UNIRRAD_UR	RECEIVE.FOR.PROCESSING			144.46
UNIRRAD_UR	SHIP.TO.STORAGE			144.46

Table . ..5-2
Alternative 4 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	1994	1995	1996	1997	1998	1999	2000	2001	2002
RH Storage										
STORAGE.RH.DISP	CANISTERS									
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	MISC_SOURCES									
STORAGE.RH.DISP	RH_LLMW_GTCIII	14.20	14.20	14.20	14.20	14.20	14.20	14.20	42.50	70.80
STORAGE.RH.DISP	RH_LLW_GTCIII	24.30	24.60	24.90	25.20	25.50	25.80	26.10	309.70	1159.90
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**38.50**	**38.80**	**39.10**	**39.40**	**39.70**	**40.00**	**40.30**	**352.20**	**1230.70**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	1419.55	2746.52	4060.99	5853.46	7319.88	8849.02	10402.89	12176.20	14153.07
STORAGE.RH.PROC	RH_TRU	1084.19	1187.59	1226.09	1227.79	1254.69	1279.49	1304.29	1305.99	1307.69
STORAGE.RH.PROC	RH_TRUM	448.47	572.86	697.26	864.94	1014.53	1173.17	1340.85	1519.53	1720.83
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**2970.70**	**4525.47**	**6002.84**	**7964.69**	**9607.60**	**11320.18**	**13066.53**	**15020.22**	**17200.09**
Total RH Storage		**3009.20**	**4564.27**	**6041.94**	**8004.09**	**9647.30**	**11360.18**	**13106.83**	**15372.42**	**18430.79**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	50.20	52.30	54.60	87.50	120.39	214.48	262.67	308.56	446.25
STORAGE.CH.DISP	CH_LLW_GTCIII								283.30	1133.20
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
STORAGE.CH.DISP	UNIRRAD_UR									
Total CH Storage Prior to Disposal		**50.20**	**52.30**	**54.60**	**87.50**	**120.39**	**214.48**	**262.67**	**591.86**	**1579.45**
STORAGE.CH.PROC	CH_LLMW	725.27	747.17	769.07	790.97	812.88	834.77	856.68	878.57	900.48
STORAGE.CH.PROC	CH_TRU	178.94	317.70	428.51	441.19	453.76	490.80	706.45	713.18	756.91
STORAGE.CH.PROC	CH_TRUM	0.72	1.12	1.73	1.93	2.08	2.23	6.58	6.89	7.20
STORAGE.CH.PROC	SODIUM									
STORAGE.CH.PROC	UNIRRAD_UR	12.02	24.06	36.10	48.14	60.18	72.22	84.26	96.30	108.34
Total CH Storage Prior to Processing		**916.95**	**1090.06**	**1235.42**	**1282.24**	**1328.89**	**1400.03**	**1653.97**	**1694.95**	**1772.93**
Total CH Storage		**967.15**	**1142.36**	**1290.02**	**1369.73**	**1449.28**	**1614.50**	**1916.63**	**2286.81**	**3352.38**
Grand Total		**3976.36**	**5706.63**	**7331.96**	**9373.82**	**11096.59**	**12974.69**	**15023.47**	**17659.23**	**21783.16**

Table A.5-2
Alternative 4 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2003	2004	2005	2006	2007	2008	2009	2010	2011
RH Storage										
STORAGE.RH.DISP	CANISTERS								451.00	902.00
STORAGE.RH.DISP	CS_CAPSULES				2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	MISC_SOURCES				15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	99.10	184.10	269.10	410.70	552.30	693.90	835.50	892.20	920.50
STORAGE.RH.DISP	RH_LLW_GTCIII	2576.60	5126.50	8526.20	13908.90	21274.60	28357.10	34873.00	37139.60	38556.30
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**2675.70**	**5310.60**	**8795.30**	**14336.98**	**21844.28**	**29068.38**	**35725.88**	**38500.18**	**40396.18**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38						
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00						
STORAGE.RH.PROC	RH_LLMW	16170.65	18967.64	21598.60	19881.65	17995.01	16274.31	14275.86	12761.94	11417.09
STORAGE.RH.PROC	RH_TRU	1309.39	1311.09	1312.79	1060.49	783.69	661.99	532.69	314.55	272.85
STORAGE.RH.PROC	RH_TRUM	1926.65	5994.06	13730.60	17726.88	15005.46	11832.95	9497.02	7850.91	6284.66
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**19425.19**	**26291.29**	**36660.48**	**38670.14**	**33785.28**	**28770.37**	**24306.69**	**20928.51**	**17975.73**
Total RH Storage		**22100.89**	**31601.89**	**45455.78**	**53007.12**	**55629.56**	**57838.75**	**60032.57**	**59428.69**	**58371.90**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	614.52	793.61	942.10	1147.19	1352.28	1572.67	1793.05	1928.54	2035.63
STORAGE.CH.DISP	CH_LLW_GTCIII	2549.60	5099.20	8498.60	13881.00	21246.40	28328.60	34844.20	37110.50	38526.90
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
STORAGE.CH.DISP	UNIRRAD_UR				24.08	60.20	84.28	96.32	96.32	120.40
Total CH Storage Prior to Disposal		**3164.12**	**5892.81**	**9440.70**	**15052.27**	**22658.88**	**29985.54**	**36733.57**	**39135.36**	**40682.93**
STORAGE.CH.PROC	CH_LLMW	922.38	944.27	966.17	847.75	681.82	581.54	477.03	403.00	319.97
STORAGE.CH.PROC	CH_TRU	812.88	851.06	887.19	746.35	626.57	535.22	484.62	414.32	364.34
STORAGE.CH.PROC	CH_TRUM	7.51	8.46	10.68	14.93	11.98	20.58	20.23	11.64	12.29
STORAGE.CH.PROC	SODIUM						177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	120.38	132.42	144.46	120.38	84.26	60.18	48.14	48.14	24.06
Total CH Storage Prior to Processing		**1863.15**	**1936.21**	**2008.51**	**1729.40**	**1404.64**	**1374.53**	**1207.03**	**1054.10**	**897.67**
Total CH Storage		**5027.28**	**7829.02**	**11449.21**	**16781.67**	**24063.51**	**31360.07**	**37940.60**	**40189.46**	**41580.59**
Grand Total		**27128.16**	**39430.91**	**56904.99**	**69788.79**	**79693.07**	**89198.82**	**97973.17**	**99618.15**	**99952.50**

Table . .5-2
Alternative 4 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2012	2013	2014	2015	2016	2017	2018	2019	2020
RH Storage										
STORAGE.RH.DISP	CANISTERS	1353.00	1804.00	2255.00	2706.00	3157.00	3608.00	4059.00	4510.00	4961.00
STORAGE.RH.DISP	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	934.70	999.16	1060.81	1122.46	1184.12	1245.77	1307.43	1369.09	1430.74
STORAGE.RH.DISP	RH_LLW_GTCIII	39264.80	40079.20	40185.40	40291.60	40397.80	40504.00	40610.20	40716.40	40822.60
STORAGE.RH.DISP	RH_TRU								12.00	12.00
STORAGE.RH.DISP	RH_TRUM								12.00	12.00
STORAGE.RH.DISP	SR_CAPSULES					1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Disposal		**41569.88**	**42899.73**	**43518.59**	**44137.44**	**44757.42**	**45376.28**	**45995.13**	**46637.99**	**47256.84**
STORAGE.RH.PROC	CS_CAPSULES									
STORAGE.RH.PROC	MISC_SOURCES									
STORAGE.RH.PROC	RH_LLMW	10585.82	10800.48	11801.02	12658.49	13231.27	14166.42	12016.84	9672.57	7648.67
STORAGE.RH.PROC	RH_TRU	251.15	308.60	368.60	541.10	650.62	670.62	802.09	770.62	728.62
STORAGE.RH.PROC	RH_TRUM	5014.71	4958.13	5147.28	4870.98	4990.98	4882.47	4363.70	3373.92	2724.53
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12					
Total RH Storage Prior to Processing		**15852.80**	**16068.32**	**17318.02**	**18071.68**	**18872.86**	**19719.51**	**17182.62**	**13817.11**	**11101.81**
Total RH Storage		**57422.68**	**58968.06**	**60836.61**	**62209.13**	**63630.28**	**65095.79**	**63177.75**	**60455.09**	**58358.66**
CH Storage										
STORAGE.CH.DISP	CH_LLMW_GTCIII	2113.32	2364.79	2613.46	2862.13	3095.50	3328.87	3546.94	3765.02	3967.80
STORAGE.CH.DISP	CH_LLW_GTCIII	39235.10	40181.71	40420.13	40658.54	40896.95	41135.37	41373.78	41612.19	41850.61
STORAGE.CH.DISP	CH_TRU			12.00					37.42	40.20
STORAGE.CH.DISP	CH_TRUM								48.00	36.00
STORAGE.CH.DISP	UNIRRAD_UR	120.40	120.40	120.40	120.40	120.40	120.40	120.40	120.40	120.40
Total CH Storage Prior to Disposal		**41468.82**	**42666.90**	**43165.98**	**43641.07**	**44112.85**	**44584.64**	**45041.13**	**45583.03**	**46015.01**
STORAGE.CH.PROC	CH_LLMW	306.34	312.58	290.44	248.42	228.24	208.24	225.82	184.51	157.27
STORAGE.CH.PROC	CH_TRU	356.33	515.51	721.02	959.21	1045.45	1205.45	1157.94	1177.89	1192.19
STORAGE.CH.PROC	CH_TRUM	11.22	353.44	525.52	724.45	904.45	1184.45	1248.45	1182.22	1062.22
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	24.06	24.06	24.06	24.06	24.06	24.06	24.06	24.06	24.06
Total CH Storage Prior to Processing		**874.95**	**1382.60**	**1738.05**	**2133.13**	**2379.20**	**2799.20**	**2833.26**	**2745.68**	**2612.74**
Total CH Storage		**42343.77**	**44049.50**	**44904.03**	**45774.20**	**46492.05**	**47383.84**	**47874.38**	**48328.71**	**48627.74**
Grand Total		**99766.46**	**103017.56**	**105740.65**	**107983.33**	**110122.33**	**112479.62**	**111052.14**	**108783.81**	**106986.40**

Table .5-2
Alternative 4 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2021	2022	2023	2024	2025	2026	2027	2028
RH Storage									
STORAGE.RH.DISP	CANISTERS	5412.00	5863.00	6314.00	6765.00	7216.00	7667.00	8118.00	8569.00
STORAGE.RH.DISP	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.DISP	RH_LLMW_GTCIII	1492.39	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05
STORAGE.RH.DISP	RH_LLW_GTCIII	40928.80	41035.00	41035.30	41035.30	41035.30	41035.30	41035.30	41035.30
STORAGE.RH.DISP	RH_TRU	83.58	72.00						
STORAGE.RH.DISP	RH_TRUM	50.38	31.19						
STORAGE.RH.DISP	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Disposal		**47985.66**	**48573.74**	**48921.85**	**49372.85**	**49823.85**	**50274.85**	**50725.85**	**51176.85**
STORAGE.RH.PROC	CS_CAPSULES								
STORAGE.RH.PROC	MISC_SOURCES								
STORAGE.RH.PROC	RH_LLMW	5195.21	3561.37						
STORAGE.RH.PROC	RH_TRU	321.24	281.24						
STORAGE.RH.PROC	RH_TRUM	1915.31	862.85						
STORAGE.RH.PROC	SR_CAPSULES								
Total RH Storage Prior to Processing		**7431.76**	**4705.46**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total RH Storage		**55417.42**	**53279.20**	**48921.85**	**49372.85**	**49823.85**	**50274.85**	**50725.85**	**51176.85**
CH Storage									
STORAGE.CH.DISP	CH_LLMW_GTCIII	4170.58	4373.35	4375.65	4375.65	4375.65	4375.65	4375.65	4375.65
STORAGE.CH.DISP	CH_LLW_GTCIII	42089.02	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44
STORAGE.CH.DISP	CH_TRU	132.40	122.30						
STORAGE.CH.DISP	CH_TRUM	108.12	120.00						
STORAGE.CH.DISP	UNIRRAD_UR	132.44	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total CH Storage Prior to Disposal		**46632.55**	**47087.55**	**46847.55**	**46847.55**	**46847.55**	**46847.55**	**46847.55**	**46847.55**
STORAGE.CH.PROC	CH_LLMW	49.86	43.98						
STORAGE.CH.PROC	CH_TRU	1035.29	1056.48						
STORAGE.CH.PROC	CH_TRUM	870.22	726.22						
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	12.02							
Total CH Storage Prior to Processing		**2144.39**	**2003.68**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**	**177.00**
Total CH Storage		**48776.94**	**49091.23**	**47024.55**	**47024.55**	**47024.55**	**47024.55**	**47024.55**	**47024.55**
Grand Total		**104194.36**	**102370.43**	**95946.40**	**96397.40**	**96848.40**	**97299.40**	**97750.40**	**98201.40**

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SOLID WASTE AND MATERIALS SYSTEMS ALTNERATIVES STUDY

VOLUME III

APPENDIX A.6
Alternative 5 Process Logic, Computer Modeling & Output

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A.6 ALTERNATIVE 5 PROCESS LOGIC, COMPUTER MODELING & OUTPUT

The process flowsheet for the planning baseline is shown in Figure A.6-1. The flowsheet is constructed similarly to Alternatives 1 through 4 flowsheets; processing activities are in the center, and disposal or offsite removal activities are at right in the figure. The waste streams and materials are identical to those used for Alternatives 1 through 4.

A summary of the facilities assumed as the baseline is provided below. A detailed discussion of these facilities is provided in Section 6.8.2.

The storage facilities are as follows:

- Central Waste Complex (CWC) (Phase-I through IV);
- 2727-W Building;
- Waste Encapsulation and Storage Facility (WESF)
- UO_2 Plant;
- 200 Area Hallam and Sodium Reaction Experiment (SRE) Sodium Storage;
- Fast Flux Test Facility (FFTF) Sodium Storage Facility (planned);
- CWC Phase V, W-112 (planned);
- Nonhazardous Special-Case Waste Storage, W-272 (planned);
- Hazardous Special-Case Waste Storage, W-349 (planned); and
- HLW Modular Storage Facility (planned).

The processing facilities are as follows:

- Sodium Reaction Facility (planned)
- Waste Receiving and Processing (WRAP) 2B (planned)
- Cs/Sr Overpack Facility (planned)
- WRAP-1
- WRAP-2A or Privatized Mixed Waste Treatment
- Commercial Thermal Treatment Facility (CTTF)

The disposal facilities are as follows:

- Mixed Waste Disposal Trench
- Waste Isolation Pilot Plant (planned)
- High-Level Waste Geologic Respiratory (planned)
- GTC-3 LLW Intermediate Depth Disposal Facility (not yet planned)

Planning assumptions for Alternative 5 are outlined in Table 6.8-1 Small-Container CH Wastes and the facilities that provide assay/certification and other processing functions for this waste, including WRAP-1, WRAP-2A and CTTF, are not within the scope of the M-33 Milestone. The operation schedule for the storage facilities will be for the entire time period under consideration for this study (35 years). The processing start-up dates range from the year 2006 (WRAP Module 2B) to the year 2008 (contaminated sodium processing), with all processing operations completed by the year 2023. The table also indicated the waste streams and materials managed by each facility.

This section also provides the waste processing assumptions, functional flow diagrams, and model results for Alternative 5. The first section, which addresses the waste processing assumptions, describes the assumptions associated with each of the functional flow diagrams presented in Section A.6.1.1 through A.6.1.8. These assumptions identify volume increases or decreases associated with waste processes, as well as waste routing splits based on percentages of the volume. The second section shows the functional flow diagrams for Alternative 5 which incorporate these assumptions. The model results of annual throughput and storage levels that correspond with each of these diagrams are provided in the third section.

A.6.1 Assumptions Associated with Functional Flow Diagrams

The assumptions associated with the functional flow diagrams presented in Section A.6.1.1 through A.6.1.8 are waste stream specific. The waste stream specific assumptions follow.

A.6.1.1 Transuranic Waste. Transuranic waste flow is divided initially into two categories: existing and forecast waste. The baseline assumption is that any waste now existing can be shipped directly from its current storage location to processing in WRAP-2B. The current storage is primarily in Low-Level Burial Ground trenches, the 200 Area Tank Farms, or in 300 Area laboratories. Forecast waste to be generated in the future is assumed to be shipped from the point of generation to new storage in the Central Waste Complex provided by Project W-112 for Small-Container CH waste and future projects (not currently planned) for RH and Large-Container CH waste.

Transuranic waste includes RH waste containers; CH or RH containers larger that 200 liter drums; large, failed equipment; and, Special-Case CH waste. Waste for the Planning Baseline includes all streams identified as WRAP-2B feed in WHC-SD-W255-TI-001, Rev. 1. Reactor irradiated nuclear materials and high-Pu_{238} content waste from the 300 Areas is addressed as "Miscellaneous Sources" in Section A.6.1.5.

Processing for all TRU waste within the scope of this Alternative was planned to be handled by the WRAP-2B project. Processing steps will be: receiving, size-reduction, sorting, packaging, certification, and shipping. Treatment to meet subsequent facility acceptance criteria (such as WIPP) will also be necessary for some waste. A small quantity of highly radioactive material (Miscellaneous Sources) requires a highly shielded, small hot-cell for processing. The nominal radiation level expected for these Miscellaneous Sources is 2000 R/hr. A large hot-cell with moderate shielding for fields up to 100 R/hr will be provided for all other RH and Large-Container CH TRU and LLMW boxes and failed equipment.

Smaller glovebox processing lines will be provided for Special-Case CH waste. These waste forms will be received from storage in small drums and boxes. The TRU and LLW steams will be segregated to avoid cross-contamination.

After processing, packaging, and certification, CH TRU will be shipped to the CWC for storage prior to offsite disposal at WIPP. The RH TRU waste will be sent to Special-Case Waste Storage prior to WIPP disposal.

Buried Pre-1970 TRU waste, contaminated soils, FFTF sodium and Spent Nuclear Fuel (SNF) are outside the scope of the M-33 Milestone.

A.6.1.1.1 Assumptions for Remote-Handled Transuranic Waste. Incoming RH TRU waste considered "suspect" received a 3.0 increase to account for the overpack. The assumptions that apply to the functions for processing remote-handled transuranic waste follow:

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.12 for waste in long equipment containers and 1.6 for all other waste. In addition, it was assumed that 1.07% of the volume exiting this function would be waste and the remaining 89.3% would be the waste container for all waste in a long equipment container. For waste not in a long equipment container 37.5% was assumed to be the waste and 62.5% was the container. Long equipment containers were assumed to be reused and all other containers were assumed to be LLW that was sent to the Low Level Waste Burial Ground.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.6.1.1.2 Assumptions for Contact-Handled Transuranic Waste in Large Containers and Drums Requiring Specialized Treatment.

- Waste Removal from Overpack. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.6. In addition, it was assumed that 37.5% of the volume exiting this function would be waste and the remaining 62.5% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Assay. After TRU waste assay, 15% of the "suspect" TRU waste volumes were assumed to be CH LLMW.

- Restricted Waste Management. TRU waste volumes requiring restricted waste management were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.6.1.2 Low-Level Radioactive Mixed Waste. Existing RH LLMW will be shipped to the CWC, with appropriate shielding to achieve contact-handled radiation fields, prior to availability to Hazardous Special-Case Waste Storage, Project W-349. Subsequently, such waste and all forecast RH LLMW will be sent to Project W-349.

Processing of RH (including large containers) LLMW with moderate radiation fields (nominally up to 100 R/hr) will take place in the WRAP-2B facility. Retrieved boxes of waste and large failed equipment will use a relatively large hot cell concept where packaged waste can be received, unloaded, sorted and size reduced, treated to meet Land Deposit Restriction(s) (LDR) as necessary. The LDR treated waste will be transferred to smaller cells for processing. Processing of TRU and LLMW will be segregated to avoid cross-contamination.

The CH large containers of LLMW will be received and stored at the CWC.

Processing of CH LLMW will consist solely of large containers that can not be shipped to commercial facilities because of container size constraints. Large containers of CH LLMW will use the same relatively large, moderately shielded hot cell concept used for RH wastes up to 100 R/hr. The waste will be received, unloaded, sorted and size-reduced, sent to smaller cells for further processing, packaged and shipped to storage in the CWC. Waste requiring treatment for LDR restrictions will be then sent to WRAP-2A.

Disposal of RH LLMW will be directly from WRAP-2B to the Mixed Waste Disposal Trenches. Disposal of CH LLMW will be directly to the Mixed Waste Disposal Trenches or from WRAP-2A after treatment for LDR restrictions.

The LLMW streams resulting from TRU processing within WRAP-2B will be managed similarly to newly generated or existing LLMW.

A.6.1.2.1 Assumptions for Remote-Handled Low Level Mixed Waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.2% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Waste Stabilization. Waste volumes requiring stabilization were assumed to increase by a factor of 2.0.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

A.6.1.2.2 Assumptions for Contact-Handled Low Level Mixed Waste in Large Containers.

- Waste Removal from Overpack and Container. For this function, it was assumed that the overpack would be removed from the suspect waste volumes and that this removal would cause two-thirds (or 67%) of the waste volume to be sent out as an overpack. The remaining one-third (or 33%) of the volume would continue to be processed as waste.

- Waste Removal from Container. For this function, it was assumed that the waste volume would be increased by a factor of 1.7. In addition, it was assumed that 41.2% of the volume exiting this function would be waste and the remaining 58.8% would be the waste container.

- Waste Size Reduction. Waste volumes requiring size reduction were assumed to have no net external volume change.

- Container Shredding. It was assumed that containers or shielding removed from waste volumes would decrease by a factor of 10.0 due to shredding.

- Container Packaging. After shredding, containers or shielding removed from waste volumes would increase by a factor of 2.0 due to packaging.

- WRAP 2A. It was assumed that any LLMW requiring non-thermal stabilization would be routed to WRAP 2A for final processing prior to disposal.

- Thermal Treatment. It was assumed that any LLMW requiring thermal destruction would be sent to a commercial thermal treatment facility for processing prior to disposal.

A.6.1.3 Assumptions for Greater Than Category 3 Low Level Waste. Remote-handled GTC3 waste will be shipped to the appropriate Special-Case Waste Storage Facility, W-272 or W-349, depending on the presence or absence of hazardous components. Contact-handled GTC3 will be stored in the CWC Phase V, W-112.

Further disposition of this waste will depend on decisions made at the national level. Disposal of such waste requires a specific performance assessment. Storage in Special-Case Waste Storage or the CWC will continue until a path for disposal is chosen.

No computer modeling assumptions were made for this waste.

A.6.1.4 Assumptions for Contaminated Metallic Sodium. No assumptions were made for this waste.

A.6.1.5 Assumptions for Unirradiated Uranium. No assumptions were made for this waste.

A.6.1.6 Assumptions for Miscellaneous Materials. Miscellaneous materials consist of items that have not been declared waste and may be reused onsite or offsite.

Sodium for the FFTF will be stored in a the FFTF Sodium Storage Facility to be designed and constructed adjacent to the FFTF. This facility will house the FFTF primary, secondary, and Interim Decay Storage and Fuel Storage Facility sodium. This sodium, which will be converted in the Sodium Reaction Facility to sodium hydroxide, is to be used by Tank Waste Remediation System (TWRS) for caustic washing as part of the HLW tack sludge pretreatment process. Subsequent to conversion, the sodium will be returned to storage or else shipped to TWRS.

Contaminated sodium from the Hallam and Sodium Reactor Experiment will continue to be stored in 2727-W Building and the CWC. The preferred path for this material will be to search for users for recycling. If that is not feasible, it will be converted to a stable form and disposed onsite or offsite.

Unirradiated Uranium (UU) consists of depleted uranium, normal uranium, and low enrichment uranium. The material is stored onsite in the UO_3 Plant, in the 300 Area, (303 Building Complex, 3712, and 3716) and in the 400 Area in the 4713 Building. The baseline for this material will be continued storage while pursuing offsite reuse.

Miscellaneous sources consist of primarily high radioactive material waste in various buildings and facilities onsite. Principally laboratories such as the 324 and 325 Buildings. Material will be stored in current locations until it can be shipped to the CWC or the Canister Storage Building (planned). Requirements for processing and final disposal for these materials have not been established.

No computer modeling assumptions were made for this waste.

A.6.1.7 Assumptions for Cesium/Strontium Capsules. The capsules will continue to be stored in the WESF. The baseline assumes that overpacking in a new facility will meet repository acceptance criteria. The overpacked capsules will be shipped to the HLW Geologic Repository.

No computer modeling assumptions were made for this waste.

A.6.1.8 High Level Waste Canisters. Waste from Double Shell Tanks (DST) and Single Shell Tanks (SST) will be retrieved to the extent necessary for closure. The waste will be separated into high-level and low-level fractions so that most of the radionuclides are in the HLW fractions. The HLW stream volume will be reduced for cost effectiveness of further waste management

activities and of acceptability to the HLW Geologic Repository program. The waste will be vitrified and placed in canisters. The vitrified waste and canisters will meet the waste acceptance criteria of the HLW Geologic Repository.

Subsequent to vitrification and emplacement in canisters, the HLW will be stored onsite, until offsite shipment to the repository occurs. The Planning Baseline assumes construction of a modular Storage Facility at a location in the 200 Areas, with cask shipping/receiving capabilities.

No computer modeling assumptions were made for this waste.

A.6.2 Functional Flow Diagrams Including Assumptions for Alternative 5

Figures A.6-2 through A.6-12 show the Alternative 5 functional flow diagrams. These flow diagrams include the assumptions defined in section A.6.1 and also incorporate additional functions added due to the requirements of the model to reflect the macro-level system. These functions include "Process Facility Receiving" and "Process Facility Shipping." Both of these functions were added to the flow diagrams every occurrence that waste entered or exited the macro level processing facility in Alternative 5.

These functional flow diagrams for Alternative 5 are the basis for the model results presented in Sections A.6.3 and A.6.4.

A.6.3 Model Throughput Results for Alternative 5

Table A.6-1 shows the annual throughput results in cubic meters for each function shown in the functional flow diagrams for Alternative 5.

A.6.4 Model Storage Results for Alternative 5

Table A.6-2 shows the annual storage results in cubic meters for each storage facility for Alternative 5.

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Figure A.6-1. Alternative 5 Flow Schematic.

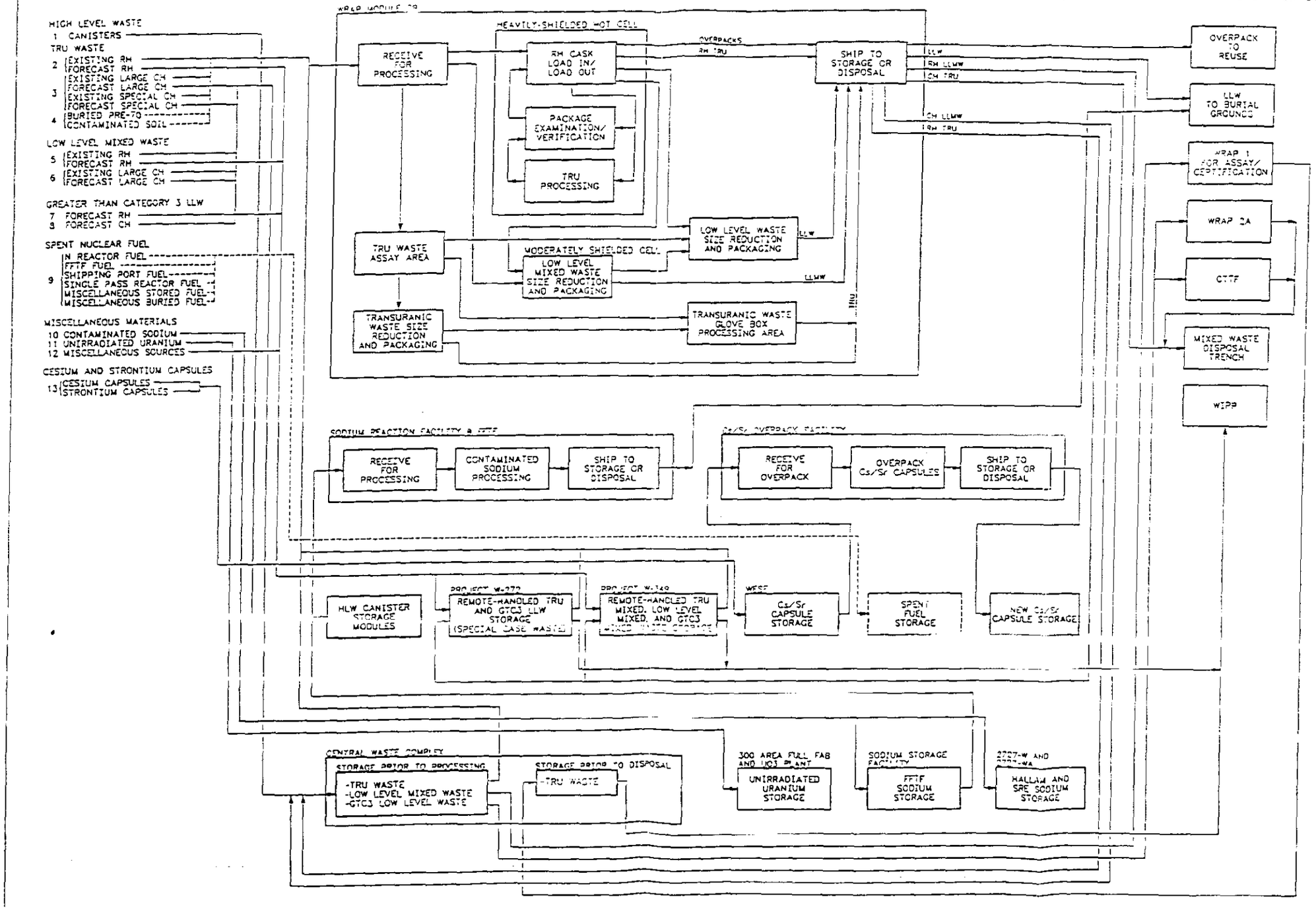

Figure A.6-2. Alternative 5 High Level Waste Canisters Functional Flow Diagrams.

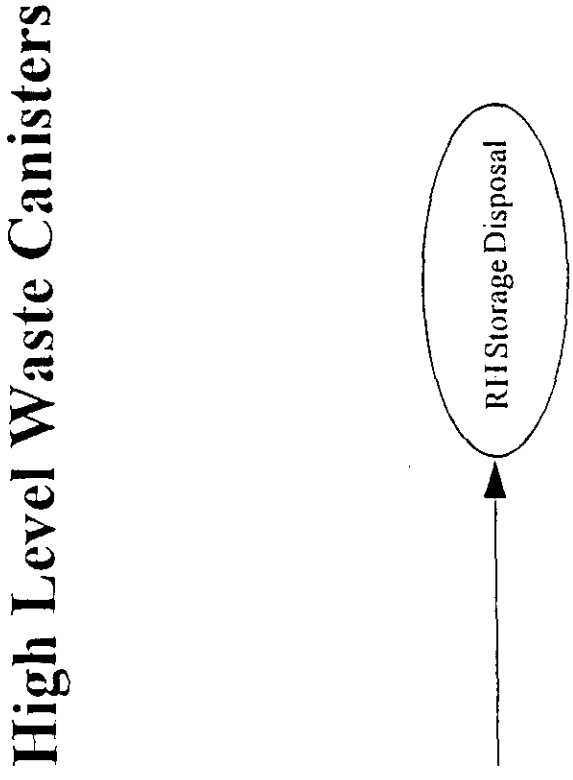

Figure A.6-3. Alternative 5 Remote-Handled Transuranic Waste Functional Flow Diagrams.

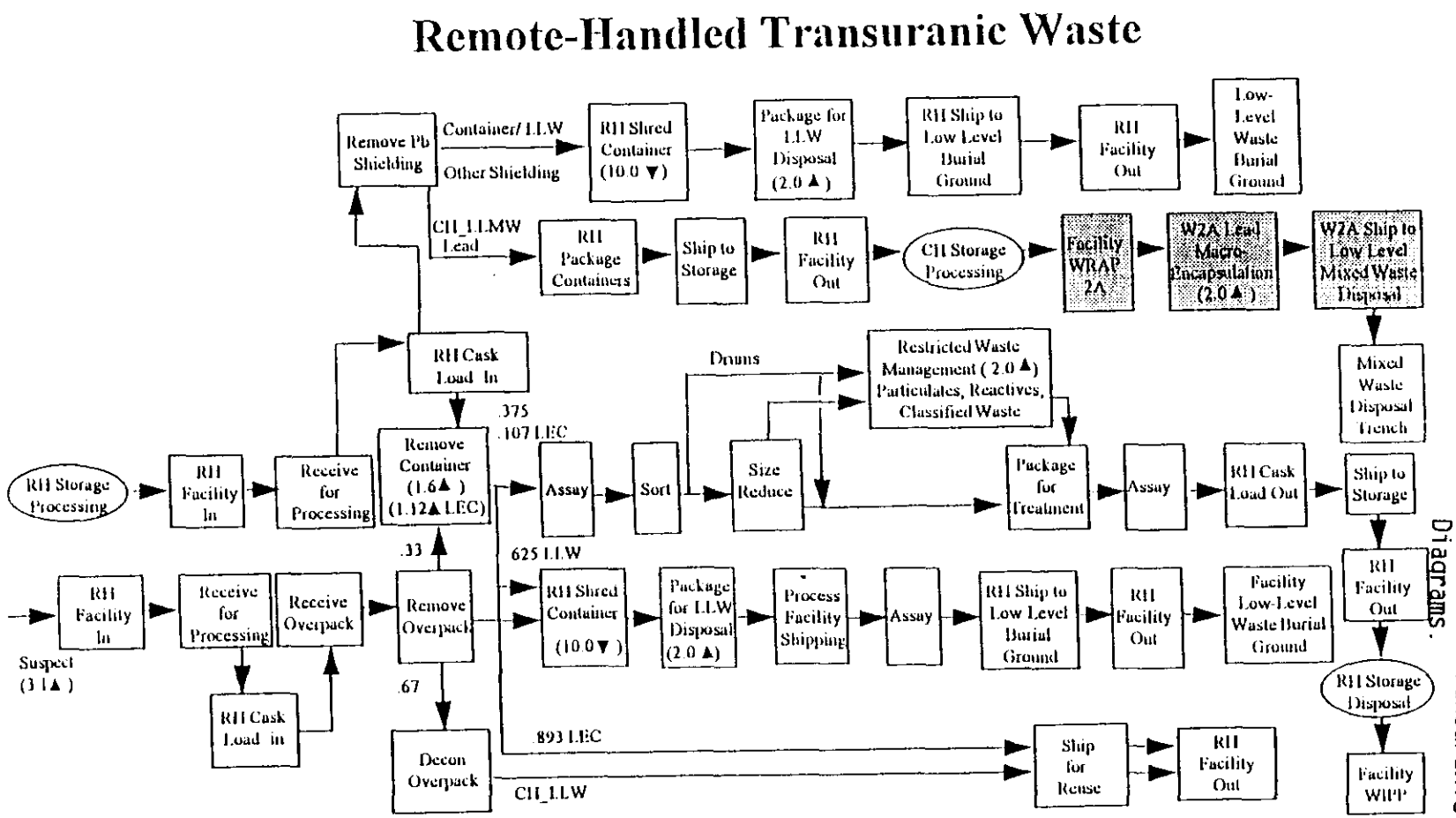

Figure A.6-4. Alternative 5 Contact-Handled Transuranic Waste in Large Containers and Special Treatment Stream Functional Flow Diagram.

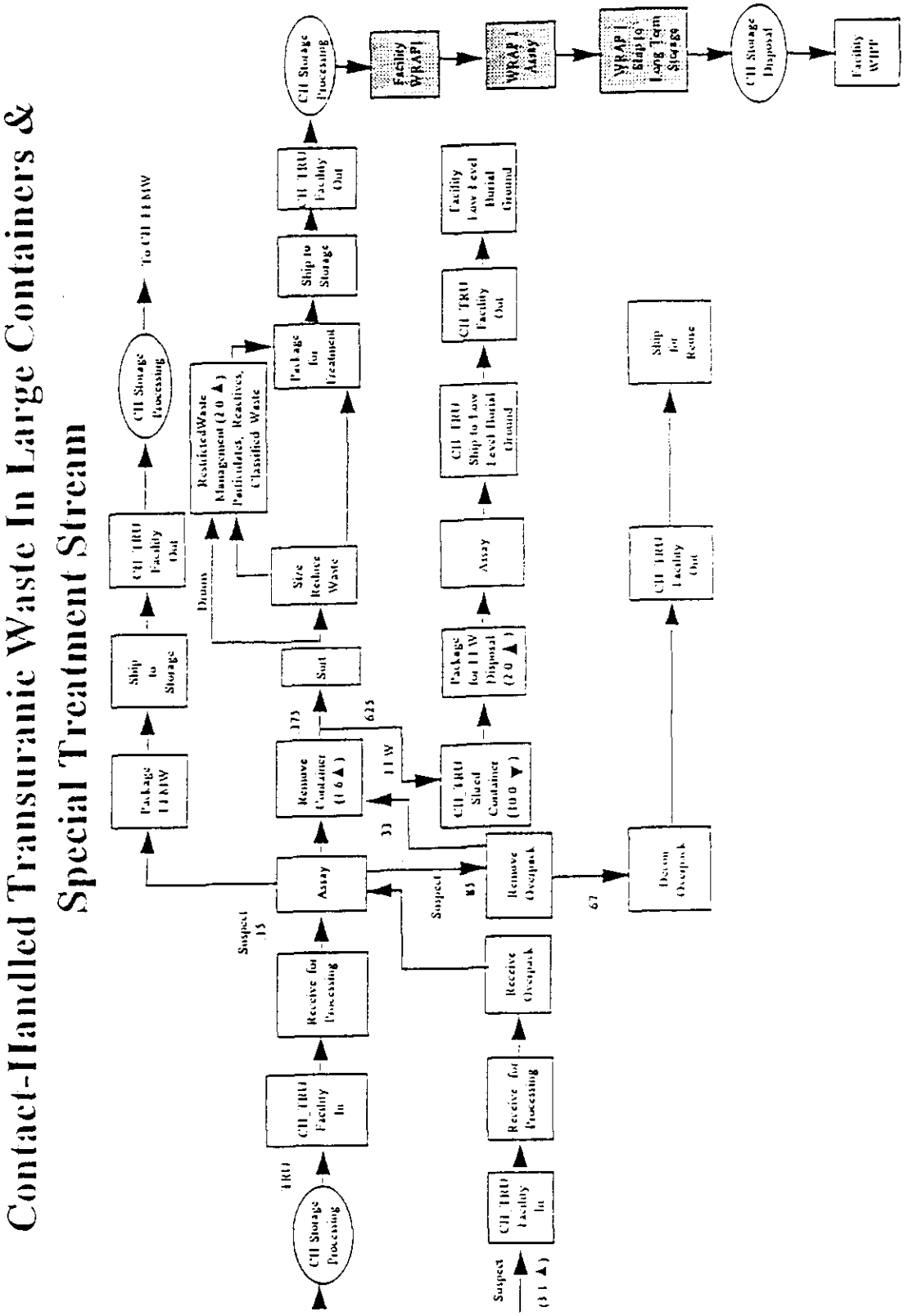

Figure A.6-5. Alternative 5 Remote-Handled Low-Level Mixed Waste Functional Flow Diagrams.

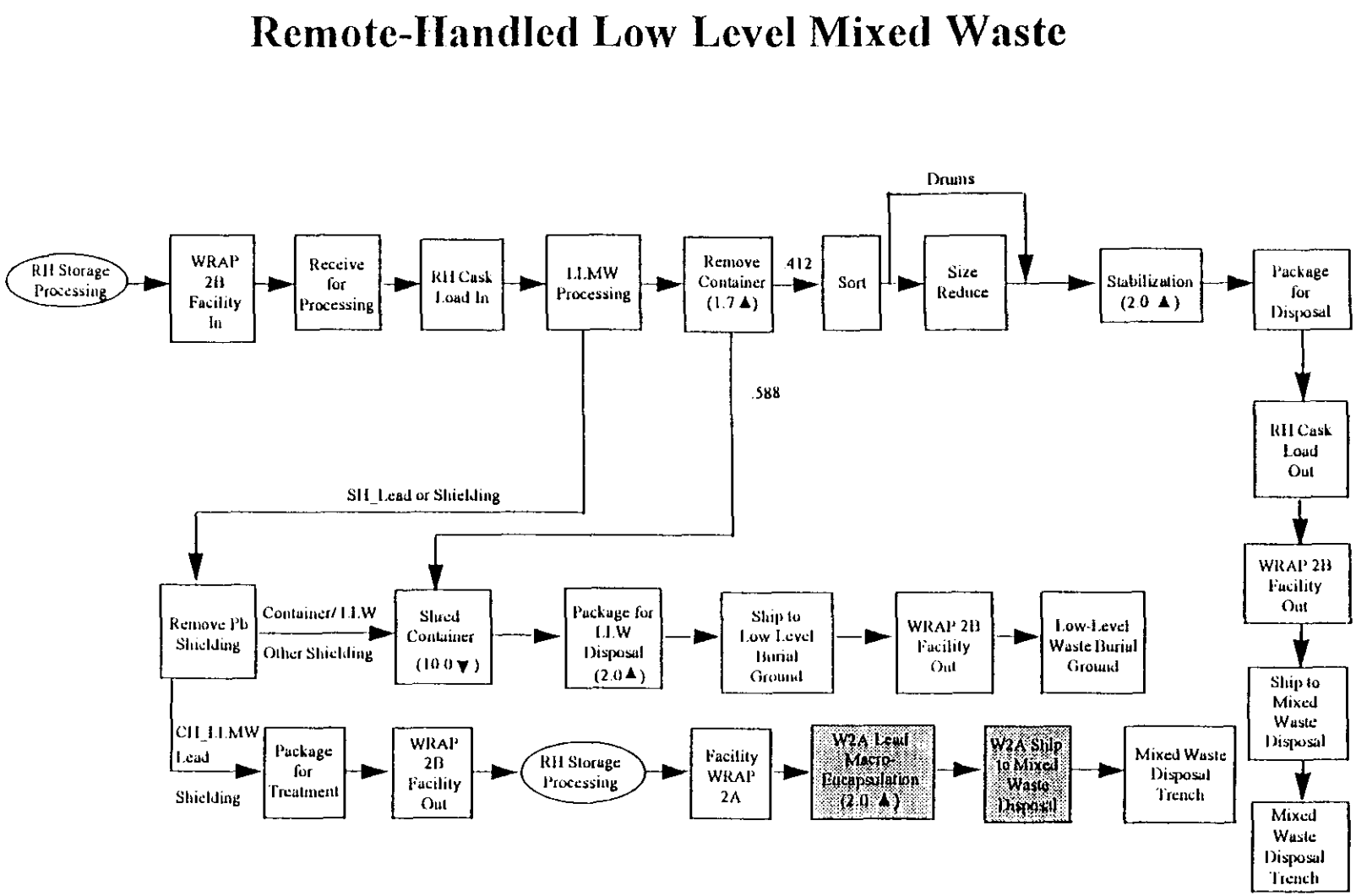

Figure A.6-6. Alternative 5 Contact-Handled Low-Level Mixed Waste in Large Containers Functional Flow Diagram.

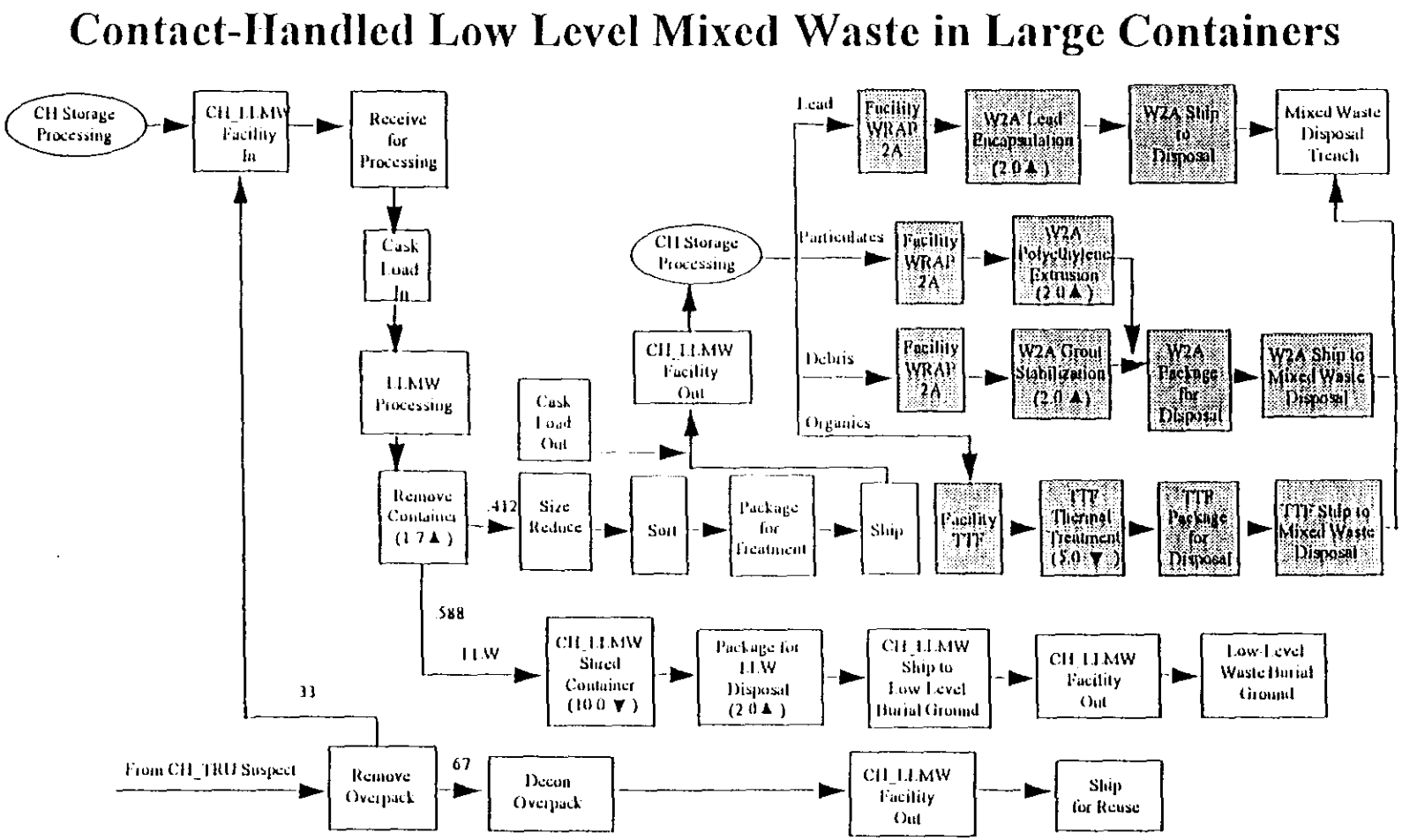

Figure A.6-7. Alternative 5 Remote-Handled Greater Than Category III Low-Level and Low-Level Mixed Waste Functional Flow Diagrams.

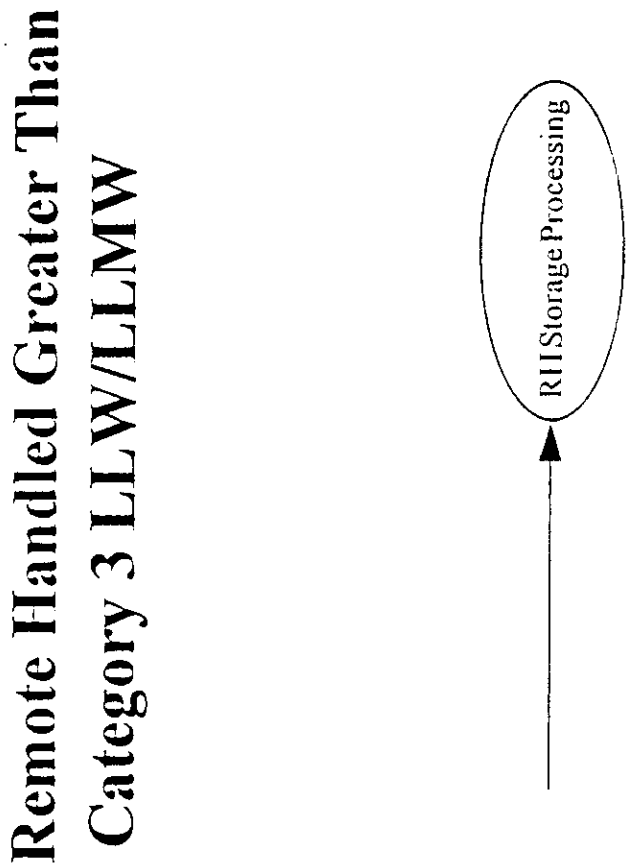

Figure A.6-8. Alternative 5 Contact-Handled Greater Than Category III Low-Level and Low-Level Mixed Waste Functional Flow Diagrams.

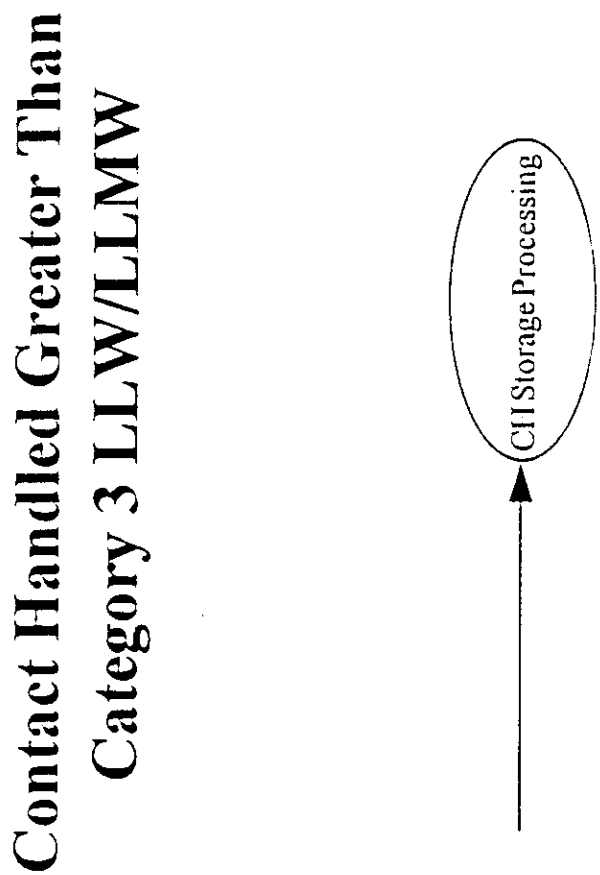

Figure A.6-9. Alternative 5 Contaminated Metallic Sodium Functional Flow Diagrams.

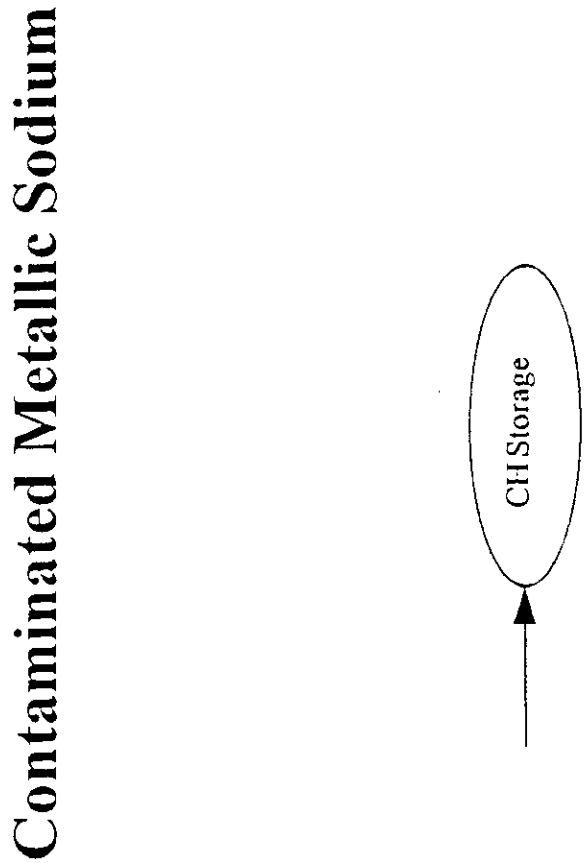

Figure A.6-10. Alternative 5 Unirradiated Uranium Functional Flow Diagram.

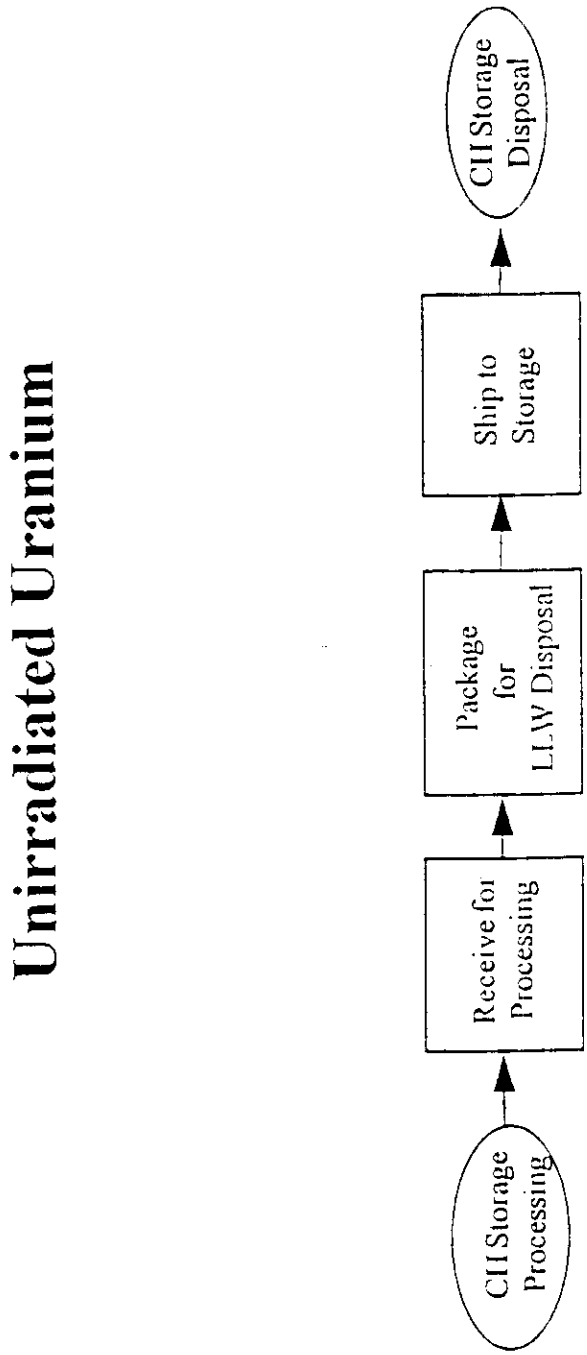

Figure A.6-11. Alternative 5 Miscellaneous Materials Functional Flow Diagram.

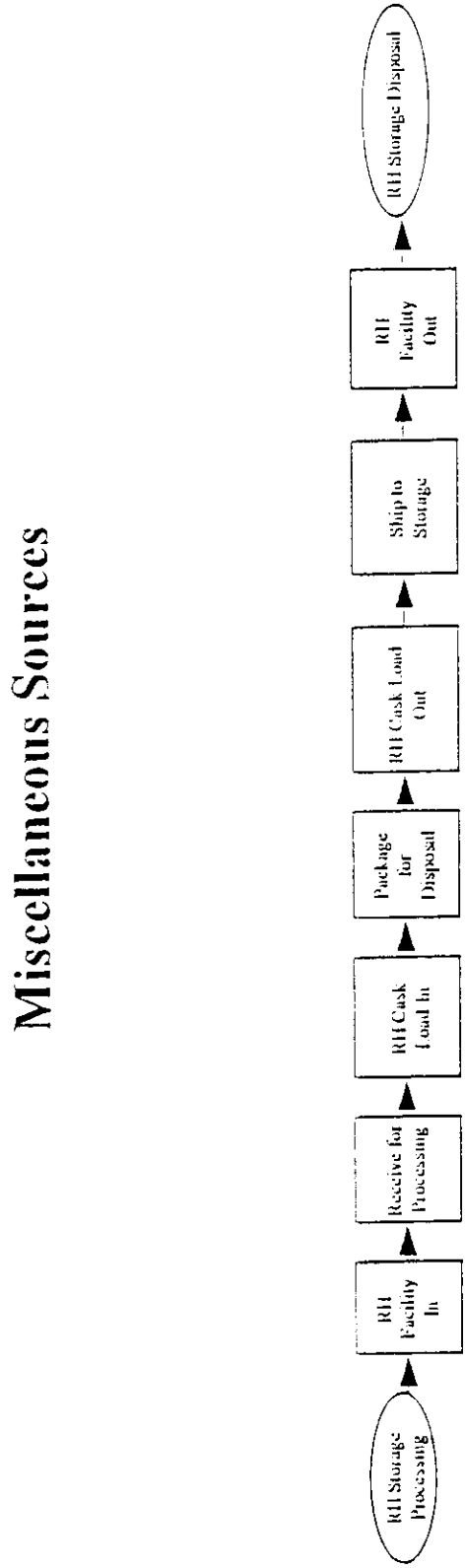

Figure A.6-12. Alternative 5 Cesium and Strontium Capsules Functional Flow Diagram.

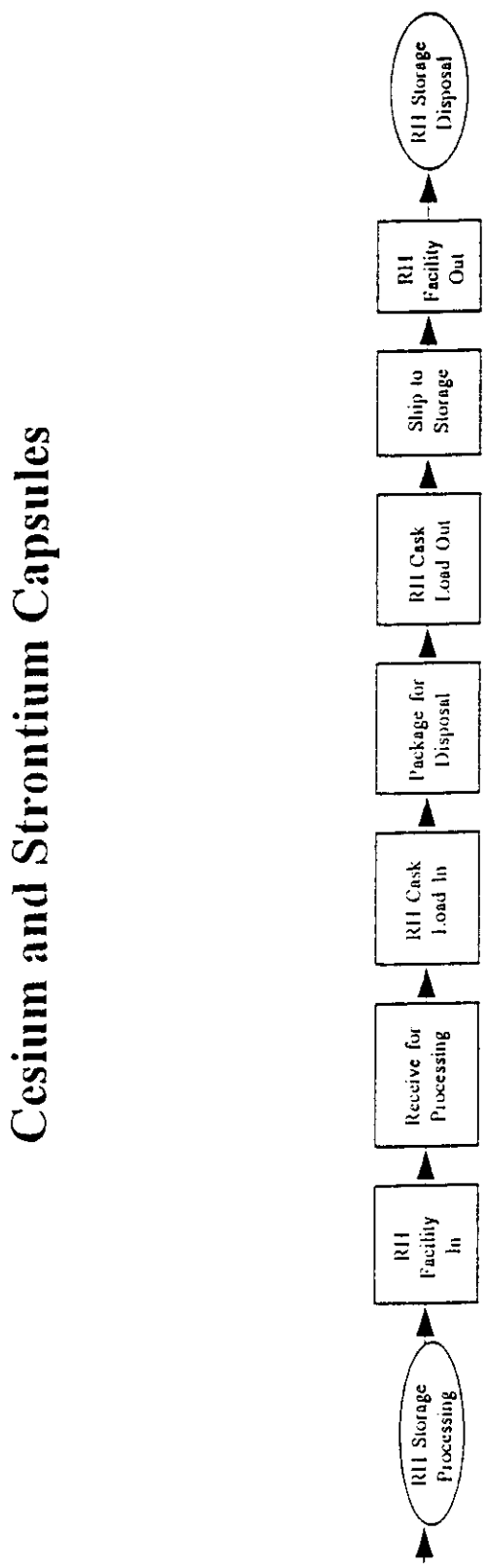

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CANISTERS	ENTERING.THE.SYSTEM											
CH LLMW	ENTERING.THE.SYSTEM	725.27	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90	21.90
CH LLMW	FACILITY.LLMW DISPOSAL											
CH LLMW	FACILITY.TTF											
CH LLMW	FACILITY.WRAP 2A											
CH LLMW	FACILITY.WRAP.2B.IN											
CH LLMW	FACILITY.WRAP.2B.OUT											
CH LLMW	LLMW.PROCESSING											
CH LLMW	PACKAGE.FOR.TREATMENT											
CH LLMW	RECEIVE.FOR.PROCESSING											
CH LLMW	REMOVE.CONTAINER											
CH LLMW	REMOVE.OVERPACK											
CH LLMW	RH.CASK.LOAD.IN											
CH LLMW	RH.CASK.LOAD.OUT											
CH LLMW	SHIP.TO.STORAGE											
CH LLMW	SIZE.REDUCE											
CH LLMW	SORT											
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL											
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL											
CH LLMW	TTF.THERMAL.TREATMENT											
CH LLMW	W2A.GROUT.STABILIZATION											
CH LLMW	W2A.LEAD.ENCAPSULATION											
CH LLMW	W2A.PACKAGE FOR.DISPOSAL											
CH LLMW	W2A.POLYETHYLENE.EXTRUSION											
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL											
CH LLMW GTCIII	ENTERING.THE.SYSTEM	50.20	2.10	2.30	32.90	32.90	94.08	48.19	45.90	137.68	168.28	179.09
CH LLW	ASSAY											
CH LLW	CH.LLMW.SHRED.CONTAINER											
CH LLW	CH.SHIP.TO.LLW.BURIAL											
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL											
CH LLW	CH.TRU.SHRED.CONTAINER											
CH LLW	DECON.OVERPACK											
CH LLW	FACILITY.LLW.BURIAL											
CH LLW	FACILITY.WRAP.2B.OUT											
CH LLW	PACKAGE.FOR.DISPOSAL											
CH LLW	RH.SHIP.TO.LLW.BURIAL											
CH LLW	RH.SHRED.CONTAINER											
CH LLW	RH.TRU.SHIP.TO.LLW.BURIAL											
CH LLW	RH.TRU.SHRED.CONTAINER											
CH LLW	SHIP.FOR.REUSE											
CH LLW GTCIII	ENTERING.THE.SYSTEM								283.30	849.90	1416.40	2549.60
CH TRU	ASSAY											

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CANISTERS	ENTERING.THE.SYSTEM						451.00	451.00	451.00	451.00	451.00	451.00
CH LLMW	ENTERING.THE.SYSTEM	21.90	47.48	21.90	21.90	21.90	47.51	21.90	21.90	21.90	47.52	21.90
CH LLMW	FACILITY.LLMW.DISPOSAL		227.90	191.17	249.94	246.63	250.36	234.54	268.62	246.60	252.21	250.39
CH LLMW	FACILITY.TTF						0.90				0.45	
CH LLMW	FACILITY.WRAP.2A		113.95	97.66	124.97	135.24	125.09	117.27	122.38	135.23	114.13	125.19
CH LLMW	FACILITY.WRAP.2B.IN		162.69	194.29	265.07	255.78	339.37	173.42	165.64	127.50	93.29	22.69
CH LLMW	FACILITY.WRAP.2B.OUT		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	LLMW.PROCESSING		162.69	194.29	265.07	255.78	339.37	173.42	165.64	127.50	93.29	22.69
CH LLMW	PACKAGE.FOR.TREATMENT		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	RECEIVE.FOR.PROCESSING		162.69	194.29	265.07	255.78	339.37	173.42	165.64	127.50	93.29	22.69
CH LLMW	REMOVE.CONTAINER		162.69	194.29	265.07	255.78	339.37	173.42	165.64	127.50	93.29	22.69
CH LLMW	REMOVE.OVERPACK		302.65	374.45	383.94	338.74	350.41	299.68	316.91	242.71	225.00	45.00
CH LLMW	RH.CASK.LOAD.IN		162.69	194.29	265.07	255.78	339.37	173.42	165.64	127.50	93.29	22.69
CH LLMW	RH.CASK.LOAD.OUT		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	SHIP.TO.STORAGE		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	SIZE.REDUCE		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	SORT		113.95	136.08	185.66	179.15	237.70	121.46	116.01	89.30	65.34	15.89
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL						0.18				0.09	
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL						0.18				0.09	
CH LLMW	TTF.THERMAL.TREATMENT						0.90				0.45	
CH LLMW	W2A.GROUT.STABILIZATION		99.39	72.70	100.72	72.70	74.03	85.38	34.60	46.02	46.39	58.69
CH LLMW	W2A.LEAD.ENCAPSULATION											
CH LLMW	W2A.PACKAGE.FOR.DISPOSAL		227.90	191.17	249.94	246.63	250.18	234.54	268.62	246.60	252.12	250.39
CH LLMW	W2A.POLYETHYLENE.EXTRUSION		14.56	22.88	24.25	50.61	51.06	31.89	99.72	77.28	79.67	66.50
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL		227.90	191.17	249.94	246.63	250.18	234.54	268.62	246.60	252.12	250.39
CH LLMW_GTCIII	ENTERING.THE.SYSTEM	148.49	205.09	205.09	220.39	220.39	135.49	107.09	77.69	251.47	248.67	248.67
CH LLW	ASSAY		844.05	791.86	654.75	643.73	595.07	518.97	387.41	683.11	705.99	585.56
CH LLW	CH.LLMW.SHRED.CONTAINER		162.63	194.21	264.97	255.67	339.24	173.35	165.57	127.45	93.25	22.68
CH LLW	CH.SHIP.TO.LLW.BURIAL		32.52	38.84	52.99	51.14	67.85	34.67	33.11	25.49	18.65	4.54
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL		134.88	163.47	169.05	145.67	176.42	134.86	146.00	473.92	454.28	391.42
CH LLW	CH.TRU.SHRED.CONTAINER		674.40	817.36	845.23	728.34	882.11	674.31	730.01	2369.58	2271.41	1957.10
CH LLW	DECON.OVERPACK		202.78	250.88	257.24	226.96	234.77	200.79	212.33	162.62	150.75	30.15
CH LLW	FACILITY.LLW.BURIAL		1018.50	951.92	883.29	869.25	753.72	640.58	485.17	773.56	789.05	651.19
CH LLW	FACILITY.WRAP.2B.OUT		1544.71	1606.74	1494.79	1533.33	1624.41	1381.37	1471.08	1477.89	1339.70	1421.42
CH LLW	PACKAGE.FOR.DISPOSAL		509.26	475.96	441.64	434.63	376.86	320.29	242.58	386.78	394.53	325.60
CH LLW	RH.SHIP.TO.LLW.BURIAL		141.92	121.22	175.54	174.38	90.80	86.94	64.65	64.97	64.41	61.09
CH LLW	RH.SHRED.CONTAINER		709.63	606.08	877.70	871.92	454.02	434.70	323.23	324.83	322.05	305.45
CH LLW	RH.TRU.SHIP.TO.LLW.BURIAL		709.17	628.39	485.71	498.07	418.65	384.11	241.41	209.19	251.71	194.14
CH LLW	RH.TRU.SHRED.CONTAINER		3545.83	3141.94	2428.53	2490.33	2093.24	1920.53	1207.03	1045.96	1258.55	970.72
CH LLW	SHIP.FOR.REUSE		4258.44	4284.81	4508.63	4846.71	5346.13	6076.23	6816.67	5759.63	5740.33	7212.21
CH LLW_GTCIII	ENTERING.THE.SYSTEM	3399.40	5382.40	7365.40	7082.20	6515.60	2266.30	1416.40	708.20	946.61	238.41	238.41
CH TRU	ASSAY		108.44	103.24	116.14	85.89	223.55	113.75	126.57	836.29	733.46	795.65

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00	451.00
CH LLMW	ENTERING.THE.SYSTEM	21.90	21.90	118.48	92.90	21.90	21.90	47.51	21.90			
CH LLMW	FACILITY.LLMW.DISPOSAL	132.35	54.13	237.44	254.20	195.86	158.98	265.68	183.37			
CH LLMW	FACILITY.TTF			0.45				0.45				
CH LLMW	FACILITY.WRAP.2A	66.17	27.07	119.61	126.17	109.86	79.49	120.87	89.61			
CH LLMW	FACILITY.WRAP.2B.IN	28.82	38.65	221.12	170.06	120.19	178.68	157.72	72.30			
CH LLMW	FACILITY.WRAP.2B.OUT	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	LLMW.PROCESSING	28.82	38.65	221.12	170.06	120.19	178.68	157.72	72.30			
CH LLMW	PACKAGE.FOR.TREATMENT	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	RECEIVE.FOR.PROCESSING	28.82	38.65	221.12	170.06	120.19	178.68	157.72	72.30			
CH LLMW	REMOVE.CONTAINER	28.82	38.65	221.12	170.06	120.19	178.68	157.72	72.30			
CH LLMW	REMOVE.OVERPACK	2.97	9.00	95.74	90.00	108.00	122.74	99.00	98.71			
CH LLMW	RH.CASK.LOAD.IN	28.82	38.65	221.12	170.06	120.19	178.68	157.72	72.30			
CH LLMW	RH.CASK.LOAD.OUT	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	SHIP.TO.STORAGE	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	SIZE.REDUCE	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	SORT	20.19	27.07	154.87	119.11	84.19	125.15	110.47	50.64			
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.09				0.09				
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.09				0.09				
CH LLMW	TTF.THERMAL.TREATMENT			0.45				0.45				
CH LLMW	W2A.GROUT.STABILIZATION	44.69	15.34	96.10	89.73	38.38	57.36	74.41	29.35			
CH LLMW	W2A.LEAD.ENCAPSULATION					1.48						
CH LLMW	W2A.PACKAGE.FOR.DISPOSAL	132.35	54.13	237.35	254.20	192.90	158.98	265.59	183.37			
CH LLMW	W2A.POLYETHYLENE.EXTRUSION	21.49	11.73	22.58	37.38	58.07	22.13	58.39	62.34			
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL	132.35	54.13	237.35	254.20	195.86	158.98	265.59	183.37			
CH LLMW_GTCIII	ENTERING.THE.SYSTEM	233.37	233.37	218.07	218.07	202.78	202.78	202.78	2.30			
CH LLW	ASSAY	644.30	582.99	852.83	932.73	878.50	881.17	897.84	363.89			
CH LLW	CH.LLMW.SHRED.CONTAINER	28.81	38.63	221.03	169.99	120.15	178.61	157.66	72.27			
CH LLW	CH.SHIP.TO.LLW.BURIAL	5.76	7.73	44.21	34.00	24.03	35.72	31.53	14.45			
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL	376.75	380.57	499.39	522.86	560.49	543.22	595.42	187.33			
CH LLW	CH.TRU.SHRED.CONTAINER	1883.74	1902.83	2496.92	2614.32	2802.45	2716.11	2977.12	936.67			
CH LLW	DECON.OVERPACK	1.99	6.03	64.15	60.30	72.36	82.24	66.33	66.14			
CH LLW	FACILITY.LLW.BURIAL	721.31	643.90	1052.79	1076.09	1036.41	1011.50	1004.71	443.62			
CH LLW	FACILITY.WRAP.2B.OUT	1409.34	1388.26	1644.10	1725.18	1566.46	1596.99	1659.64	1019.66			
CH LLW	PACKAGE.FOR.DISPOSAL	360.66	321.95	526.40	538.04	518.20	505.75	502.35	221.81			
CH LLW	RH.SHIP.TO.LLW.BURIAL	71.25	53.19	155.75	109.36	133.87	94.61	75.34	65.28			
CH LLW	RH.SHRED.CONTAINER	356.26	265.94	778.77	546.81	669.35	473.05	376.71	326.41			
CH LLW	RH.TRU.SHIP.TO.LLW.BURIAL	267.55	202.42	353.45	409.86	318.01	337.95	302.41	176.56			
CH LLW	RH.TRU.SHRED.CONTAINER	1337.76	1012.10	1767.23	2049.32	1590.07	1689.73	1512.06	882.78			
CH LLW	SHIP.FOR.REUSE	7026.51	7406.22	4944.77	4865.28	5008.70	5069.85	5248.73	5425.97			
CH LLW_GTCIII	ENTERING.THE.SYSTEM	238.41	238.41	238.41	238.41	238.41	238.41	238.41				
CH TRU	ASSAY	858.09	825.90	1122.87	1088.00	1103.19	1127.06	1154.69	374.68			

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
CANISTERS	ENTERING.THE.SYSTEM	451.00	451.00	8569.00
CH LLMW	ENTERING.THE.SYSTEM			1630.39
CH LLMW	FACILITY.LLMW.DISPOSAL			3900.37
CH LLMW	FACILITY.TTF			2.24
CH LLMW	FACILITY.WRAP.2A			1949.96
CH LLMW	FACILITY.WRAP.2B.IN			2787.27
CH LLMW	FACILITY.WRAP.2B.OUT			1952.20
CH LLMW	LLMW.PROCESSING			2787.27
CH LLMW	PACKAGE.FOR.TREATMENT			1952.20
CH LLMW	RECEIVE.FOR.PROCESSING			2787.27
CH LLMW	REMOVE.CONTAINER			2787.27
CH LLMW	REMOVE.OVERPACK			3505.67
CH LLMW	RH.CASK.LOAD.IN			2787.27
CH LLMW	RH.CASK.LOAD.OUT			1952.20
CH LLMW	SHIP.TO.STORAGE			1952.20
CH LLMW	SIZE.REDUCE			1952.20
CH LLMW	SORT			1952.20
CH LLMW	TTF.PACKAGE.FOR.DISPOSAL			0.45
CH LLMW	TTF.SHIP.TO.LLMW.DISPOSAL			0.45
CH LLMW	TTF.THERMAL.TREATMENT			2.24
CH LLMW	W2A.GROUT.STABILIZATION			1135.97
CH LLMW	W2A.LEAD.ENCAPSULATION			1.48
CH LLMW	W2A.PACKAGE.FOR.DISPOSAL			3896.96
CH LLMW	W2A.POLYETHYLENE.EXTRUSION			812.51
CH LLMW	W2A.SHIP.TO.LLMW.DISPOSAL			3899.92
CH LLMW GTCIII	ENTERING.THE.SYSTEM			4375.65
CH LLW	ASSAY			12444.75
CH LLW	CH.LLMW.SHRED.CONTAINER			2786.15
CH LLW	CH.SHIP.TO.LLW.BURIAL			557.23
CH LLW	CH.TRU.SHIP.TO.LLW.BURIAL			6056.01
CH LLW	CH.TRU.SHRED.CONTAINER			30280.03
CH LLW	DECON.OVERPACK			2348.80
CH LLW	FACILITY.LLW.BURIAL			14806.56
CH LLW	FACILITY.WRAP.2B.OUT			26905.06
CH LLW	PACKAGE.FOR.DISPOSAL			7403.28
CH LLW	RH.SHIP.TO.LLW.BURIAL			1804.58
CH LLW	RH.SHRED.CONTAINER			9022.91
CH LLW	RH.TRU.SHIP.TO.LLW.BURIAL			6388.74
CH LLW	RH.TRU.SHRED.CONTAINER			31943.70
CH LLW	SHIP.FOR.REUSE			99845.83
CH LLW GTCIII	ENTERING.THE.SYSTEM			42327.43
CH TRU	ASSAY			10897.46

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CH_TRU	ENTERING.THE.SYSTEM	178.94	138.76	110.81	12.68	12.57	37.04	215.65	6.73	43.73	55.97	38.17
CH_TRU	FACILITY.WIPP											
CH_TRU	FACILITY.WRAP.1											
CH_TRU	FACILITY.WRAP.2B.IN											
CH_TRU	FACILITY.WRAP.2B.OUT											
CH_TRU	PACKAGE.FOR.TREATMENT											
CH_TRU	RECEIVE.FOR.PROCESSING											
CH_TRU	REMOVE.CONTAINER											
CH_TRU	RESTRICTED.WASTE.MANAGEMENT											
CH_TRU	SHIP.TO.STORAGE											
CH_TRU	SIZE.REDUCE											
CH_TRU	SORT											
CH_TRU	W1.ASSAY											
CH_TRU	W1.SHIP.TO.STORAGE											
CH_TRU_SUSPECT	ASSAY											
CH_TRU_SUSPECT	DECON.OVERPACK											
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM							519.33	519.36	519.36	519.36	519.36
CH_TRU_SUSPECT	FACILITY.WRAP.2B.IN											
CH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT											
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING											
CH_TRU_SUSPECT	RECEIVE.OVERPACK											
CH_TRU_SUSPECT	REMOVE.OVERPACK											
CH_TRU_SUSPECT	SHIP.FOR.REUSE											
CH_TRUM	ASSAY											
CH_TRUM	ENTERING.THE.SYSTEM	0.72	0.40	0.61	0.20	0.15	0.15	4.35	0.31	0.31	0.31	0.95
CH_TRUM	FACILITY.WIPP											
CH_TRUM	FACILITY.WRAP.1											
CH_TRUM	FACILITY.WRAP.2B.IN											
CH_TRUM	FACILITY.WRAP.2B.OUT											
CH_TRUM	PACKAGE.FOR.TREATMENT											
CH_TRUM	RECEIVE.FOR.PROCESSING											
CH_TRUM	REMOVE.CONTAINER											
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT											
CH_TRUM	SHIP.TO.STORAGE											
CH_TRUM	SIZE.REDUCE											
CH_TRUM	SORT											
CH_TRUM	W1.ASSAY											
CH_TRUM	W1.SHIP.TO.STORAGE											
CS_CAPSULES	ENTERING.THE.SYSTEM	2.38										
CS_CAPSULES	FACILITY.CS.SR.IN											
CS_CAPSULES	FACILITY.CS.SR.OUT											
CS_CAPSULES	PACKAGE.FOR.DISPOSAL											

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CH_TRU	ENTERING.THE.SYSTEM	36.14	36.14	36.14	42.26	42.26	33.76	33.76	27.64	976.29	973.46	985.41
CH_TRU	FACILITY.WIPP		461.32	544.61	556.24	487.68	646.50	501.29	516.24	872.10	786.78	561.98
CH_TRU	FACILITY.WRAP.1		471.42	534.51	556.24	487.68	670.50	487.39	530.14	858.19	776.68	585.98
CH_TRU	FACILITY.WRAP.2B.IN		108.44	103.24	116.14	85.89	223.55	113.75	126.57	836.29	733.46	795.65
CH_TRU	FACILITY.WRAP.2B.OUT		471.42	534.51	556.24	487.68	670.50	487.39	530.14	858.19	776.68	585.98
CH_TRU	PACKAGE.FOR.TREATMENT		471.42	534.51	556.24	487.68	670.50	487.39	530.14	858.19	776.68	585.98
CH_TRU	RECEIVE.FOR.PROCESSING		108.44	103.24	116.14	85.89	223.55	113.75	126.57	836.29	733.46	795.65
CH_TRU	REMOVE.CONTAINER		674.40	803.47	834.10	719.34	878.82	674.16	719.19	1290.16	1154.21	879.80
CH_TRU	RESTRICTED.WASTE.MANAGEMENT		66.78	52.43	55.78	56.08	143.21	82.89	98.62	84.10	84.15	58.10
CH_TRU	SHIP.TO.STORAGE		471.42	534.51	556.24	487.68	670.50	487.39	530.14	858.19	776.68	585.98
CH_TRU	SIZE.REDUCE		349.86	429.65	444.68	391.06	396.08	321.61	333.38	690.00	608.37	469.78
CH_TRU	SORT		404.64	482.08	500.46	431.60	527.29	404.50	431.51	774.10	692.53	527.88
CH_TRU	W1.ASSAY		461.32	544.61	556.24	487.68	646.50	501.29	516.24	872.10	786.78	561.98
CH_TRU	W1.SHIP.TO.STORAGE		461.32	544.61	556.24	487.68	646.50	501.29	516.24	872.10	786.78	561.98
CH_TRU_SUSPECT	ASSAY		2017.68	2496.36	2559.60	2258.28	2336.07	1997.88	2112.72	1618.08	1500.00	300.00
CH_TRU_SUSPECT	DECON.OVERPACK		1149.07	1421.68	1457.69	1286.09	1330.39	1137.79	1203.19	921.50	854.25	170.85
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	519.36	
CH_TRU_SUSPECT	FACILITY.WRAP.2B.IN		2017.68	2496.36	2559.60	2258.28	2396.07	1937.88	2112.72	1678.08	1440.00	300.00
CH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT		1149.07	1421.68	1457.69	1286.09	1330.39	1137.79	1203.19	921.50	854.25	170.85
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		2017.68	2496.36	2559.60	2258.28	2336.07	1997.88	2112.72	1618.08	1500.00	300.00
CH_TRU_SUSPECT	REMOVE.OVERPACK		2017.68	2496.36	2559.60	2258.28	2336.07	1997.88	2112.72	1618.08	1500.00	300.00
CH_TRU_SUSPECT	SHIP.FOR.REUSE		1715.03	2121.91	2175.66	1919.54	1985.66	1698.20	1795.81	1375.37	1275.00	255.00
CH_TRUM	ASSAY		1149.07	1421.68	1457.69	1286.09	1330.39	1137.79	1203.19	921.50	854.25	170.85
CH_TRUM	ENTERING.THE.SYSTEM	2.22	8.60	13.90	11.13	9.00	3.29	0.15	10.82	1079.42	1117.20	1077.30
CH_TRUM	FACILITY.WIPP			8.60	8.60	8.60	2.22	2.22	2.22	1279.42	1277.30	1277.30
CH_TRUM	FACILITY.WRAP.1			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	622.44
CH_TRUM	FACILITY.WRAP.2B.IN			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	622.44
CH_TRUM	FACILITY.WRAP.2B.OUT			13.90	11.13	9.00	3.29	0.15	10.82	1079.42	1117.20	1077.30
CH_TRUM	PACKAGE.FOR.TREATMENT			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	646.44
CH_TRUM	RECEIVE.FOR.PROCESSING			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	646.44
CH_TRUM	REMOVE.CONTAINER			13.90	11.13	9.00	3.29	0.15	10.82	1079.42	1117.20	1077.30
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT			13.90	11.13	9.00	3.29	0.15	10.82	1079.42	1117.20	1077.30
CH_TRUM	SHIP.TO.STORAGE			8.34	6.68	5.40	1.98	0.09	6.49	1.33		0.06
CH_TRUM	SIZE.REDUCE			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	646.44
CH_TRUM	SORT									646.32	670.32	646.32
CH_TRUM	W1.ASSAY			8.34	6.68	5.40	1.98	0.09	6.49	647.65	670.32	646.38
CH_TRUM	W1.SHIP.TO.STORAGE			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	622.44
CS_CAPSULES	ENTERING.THE.SYSTEM			16.68	13.36	10.80	3.95	0.18	12.98	648.99	670.32	622.44
CS_CAPSULES	FACILITY.CS.SR.IN											
CS_CAPSULES	FACILITY.CS.SR.OUT											
CS_CAPSULES	PACKAGE.FOR.DISPOSAL											

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CH TRU	ENTERING.THE.SYSTEM	979.29	981.69	973.17	973.18	967.06	967.06	967.06	14.68			
CH TRU	FACILITY.WIPP	615.65	557.18	855.49	794.92	759.82	853.14	811.02	692.48			
CH TRU	FACILITY.WRAP.1	591.65	569.18	853.10	859.09	785.72	851.24	819.13	586.59			
CH TRU	FACILITY.WRAP.2B.IN	858.09	825.90	1122.87	1088.00	1103.19	1127.06	1154.69	374.68			
CH TRU	FACILITY.WRAP.2B.OUT	591.65	569.18	877.10	857.19	847.62	921.34	887.32	364.30			
CH TRU	PACKAGE.FOR.TREATMENT	591.65	569.18	877.10	857.19	847.62	921.34	887.32	364.30			
CH TRU	RECEIVE.FOR.PROCESSING	858.09	825.90	1122.87	1088.00	1103.19	1127.06	1154.69	374.68			
CH TRU	REMOVE.CONTAINER	863.64	842.73	1301.91	1256.30	1305.15	1356.59	1339.82	559.27			
CH TRU	RESTRICTED.WASTE.MANAGEMENT	73.47	63.54	95.95	103.41	64.53	107.39	83.43	28.74			
CH TRU	SHIP.TO.STORAGE	591.65	569.18	877.10	857.19	847.62	921.34	887.32	364.30			
CH TRU	SIZE.REDUCE	444.72	442.10	685.19	662.37	718.56	706.57	720.47	306.82			
CH TRU	SORT	518.19	505.64	781.15	753.78	783.09	813.95	803.89	335.56			
CH TRU	W1.ASSAY	615.65	557.18	855.49	858.61	771.82	875.24	819.13	586.59			
CH TRU	W1.SHIP.TO.STORAGE	615.65	557.18	855.49	858.61	771.82	875.24	819.13	586.59			
CH TRU SUSPECT	ASSAY	19.80	60.00	638.28	600.00	720.00	818.28	660.00	658.08			
CH TRU SUSPECT	DECON.OVERPACK	11.28	34.17	363.50	341.70	410.04	466.01	375.87	374.78			
CH TRU SUSPECT	ENTERING.THE.SYSTEM											
CH TRU SUSPECT	FACILITY.WRAP.2B.IN	19.80	60.00	638.28	660.00	660.00	878.28	600.00	658.08			
CH TRU SUSPECT	FACILITY.WRAP.2B.OUT	11.28	34.17	363.50	341.70	410.04	466.01	375.87	374.78			
CH TRU SUSPECT	RECEIVE.FOR.PROCESSING	19.80	60.00	638.28	600.00	720.00	818.28	660.00	658.08			
CH TRU SUSPECT	RECEIVE.OVERPACK	19.80	60.00	638.28	600.00	720.00	818.28	660.00	658.08			
CH TRU SUSPECT	REMOVE.OVERPACK	16.83	51.00	542.54	510.00	612.00	695.54	561.00	559.37			
CH TRU SUSPECT	SHIP.FOR.REUSE	11.28	34.17	363.50	341.70	410.04	466.01	375.87	374.78			
CH TRUM	ASSAY	1020.10	1060.10	1195.01	1358.02	1497.30	1359.52	1637.30	377.40			
CH TRUM	ENTERING.THE.SYSTEM	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	1277.30	0.10			
CH TRUM	FACILITY.WIPP	636.12	624.12	717.37	779.30	850.44	769.11	838.44	514.56			
CH TRUM	FACILITY.WRAP.1	636.12	624.12	729.37	791.30	874.44	793.11	826.44	454.56			
CH TRUM	FACILITY.WRAP.2B.IN	1020.10	1060.10	1195.01	1358.02	1517.30	1339.52	1654.50	360.20			
CH TRUM	FACILITY.WRAP.2B.OUT	612.12	636.12	717.37	815.30	898.44	817.11	982.44	226.56			
CH TRUM	PACKAGE.FOR.TREATMENT	612.12	636.12	717.37	815.30	898.44	817.11	982.44	226.56			
CH TRUM	RECEIVE.FOR.PROCESSING	1020.10	1060.10	1195.01	1358.02	1497.30	1359.52	1637.30	377.40			
CH TRUM	REMOVE.CONTAINER	1020.10	1060.10	1195.01	1358.02	1497.30	1359.52	1637.30	377.40			
CH TRUM	RESTRICTED.WASTE.MANAGEMENT	0.06	0.06	0.37	0.49	0.06	1.39	0.06	0.12			
CH TRUM	SHIP.TO.STORAGE	612.12	636.12	717.37	815.30	898.44	817.11	982.44	226.56			
CH TRUM	SIZE.REDUCE	612.00	636.00	716.64	814.32	898.32	814.32	982.32	226.32			
CH TRUM	SORT	612.06	636.06	717.01	814.81	898.38	815.71	982.38	226.44			
CH TRUM	W1.ASSAY	636.12	624.12	729.37	791.30	874.44	781.11	826.44	466.56			
CH TRUM	W1.SHIP.TO.STORAGE	636.12	624.12	729.37	791.30	874.44	781.11	826.44	466.56			
CS CAPSULES	ENTERING.THE.SYSTEM											
CS CAPSULES	FACILITY.CS.SR.IN								2.38			
CS CAPSULES	FACILITY.CS.SR.OUT								2.38			
CS CAPSULES	PACKAGE.FOR.DISPOSAL								2.38			

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
CH_TRU	ENTERING.THE.SYSTEM			10897.46
CH_TRU	FACILITY.WIPP			11874.43
CH_TRU	FACILITY.WRAP.1			11874.43
CH_TRU	FACILITY.WRAP.2B.IN			10897.46
CH_TRU	FACILITY.WRAP.2B.OUT			11874.43
CH_TRU	PACKAGE.FOR.TREATMENT			11874.43
CH_TRU	RECEIVE.FOR.PROCESSING			10897.46
CH_TRU	REMOVE.CONTAINER			17453.07
CH_TRU	RESTRICTED.WASTE.MANAGEMENT			1402.59
CH_TRU	SHIP.TO.STORAGE			11874.43
CH_TRU	SIZE.REDUCE			9121.27
CH_TRU	SORT			10471.84
CH_TRU	W1.ASSAY			11874.43
CH_TRU	W1.SHIP.TO.STORAGE			11874.43
CH_TRU_SUSPECT	ASSAY			23371.11
CH_TRU_SUSPECT	DECON.OVERPACK			13309.84
CH_TRU_SUSPECT	ENTERING.THE.SYSTEM			7790.37
CH_TRU_SUSPECT	FACILITY.WRAP.2B.IN			23371.11
CH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT			13309.84
CH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			23371.11
CH_TRU_SUSPECT	RECEIVE.OVERPACK			23371.11
CH_TRU_SUSPECT	REMOVE.OVERPACK			19865.44
CH_TRU_SUSPECT	SHIP.FOR.REUSE			13309.84
CH_TRUM	ASSAY			12826.97
CH_TRUM	ENTERING.THE.SYSTEM			12826.97
CH_TRUM	FACILITY.WIPP			7729.16
CH_TRUM	FACILITY.WRAP.1			7729.16
CH_TRUM	FACILITY.WRAP.2B.IN			12826.97
CH_TRUM	FACILITY.WRAP.2B.OUT			7729.16
CH_TRUM	PACKAGE.FOR.TREATMENT			7729.16
CH_TRUM	RECEIVE.FOR.PROCESSING			12826.97
CH_TRUM	REMOVE.CONTAINER			12826.97
CH_TRUM	RESTRICTED.WASTE.MANAGEMENT			32.98
CH_TRUM	SHIP.TO.STORAGE			7729.16
CH_TRUM	SIZE.REDUCE			7663.20
CH_TRUM	SORT			7696.18
CH_TRUM	W1.ASSAY			7729.16
CH_TRUM	W1.SHIP.TO.STORAGE			7729.16
CS_CAPSULES	ENTERING.THE.SYSTEM			2.38
CS_CAPSULES	FACILITY.CS.SR.IN			2.38
CS_CAPSULES	FACILITY.CS.SR.OUT			2.38
CS_CAPSULES	PACKAGE.FOR.DISPOSAL			2.38

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM	15.00										
RH_LLMW	ENTERING.THE.SYSTEM	1419.55	1326.97	1314.47	1792.47	1466.42	1529.14	1553.87	1773.31	1976.87	2017.58	2796.99
RH_LLMW	FACILITY.LLMW.DISPOSAL											
RH_LLMW	FACILITY.WRAP.2B.IN											
RH_LLMW	FACILITY.WRAP.2B.OUT											
RH_LLMW	LLMW.PROCESSING											
RH_LLMW	PACKAGE.FOR.DISPOSAL											
RH_LLMW	RECEIVE.FOR.PROCESSING											
RH_LLMW	REMOVE.CONTAINER											
RH_LLMW	REMOVE.PB.SHIELDING											
RH_LLMW	RH.CASK.LOAD.IN											
RH_LLMW	RH.CASK.LOAD.OUT											
RH_LLMW	SHIP.TO.LLMW.DISPOSAL											
RH_LLMW	SIZE.REDUCE											
RH_LLMW	SORT											
RH_LLMW	STABILIZATION											
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	14.20							28.30	28.30	28.30	85.00
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	24.30	0.30	0.30	0.30	0.30	0.30	0.30	283.60	850.20	1416.70	2549.90
RH_TRU	ASSAY											
RH_TRU	ENTERING.THE.SYSTEM	1084.19	103.40	38.50	1.70	26.90	24.80	24.80	1.70	1.70	1.70	1.70
RH_TRU	FACILITY.WIPP											
RH_TRU	FACILITY.WRAP.2B.IN											
RH_TRU	FACILITY.WRAP.2B.OUT											
RH_TRU	PACKAGE.FOR.TREATMENT											
RH_TRU	RECEIVE.FOR.PROCESSING											
RH_TRU	REMOVE.CONTAINER											
RH_TRU	RESTRICTED.WASTE.MANAGEMENT											
RH_TRU	RH.CASK.LOAD.IN											
RH_TRU	RH.CASK.LOAD.OUT											
RH_TRU	SHIP.TO.STORAGE											
RH_TRU	SIZE.REDUCE											
RH_TRU	SORT											
RH_TRU_SUSPECT	DECON.OVERPACK											
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM							25.33	25.33	25.33	25.33	25.33
RH_TRU_SUSPECT	FACILITY.WRAP.2B.IN											
RH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT											
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING											
RH_TRU_SUSPECT	RECEIVE.OVERPACK											

Table A.6-1

Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CS_CAPSULES	RECEIVE.FOR.PROCESSING											
CS_CAPSULES	RH.CASK.LOAD.IN											
CS_CAPSULES	RH.CASK.LOAD.OUT											
CS_CAPSULES	SHIP.TO.STORAGE											
MISC_SOURCES	ENTERING.THE.SYSTEM											
RH_LLMW	ENTERING.THE.SYSTEM	2630.96	2459.17	2703.44	2637.21	3029.14	3555.03	4268.15	5232.22	5707.17	6559.70	7167.19
RH_LLMW	FACILITY.LLMW.DISPOSAL		1888.84	1719.23	2163.89	2224.21	1708.74	1887.76	1850.26	1666.67	1694.98	1971.82
RH_LLMW	FACILITY.WRAP.2B.IN		4461.54	4215.73	4794.56	5034.23	4928.92	5769.45	6153.19	5379.45	5531.04	6726.52
RH_LLMW	FACILITY.WRAP.2B.OUT		1888.84	1719.23	2163.89	2224.21	1708.74	1887.76	1850.26	1666.67	1694.98	1971.82
RH_LLMW	LLMW.PROCESSING		4441.54	4235.73	4774.56	5054.23	4928.92	5769.45	6153.19	5379.45	5511.04	6746.52
RH_LLMW	PACKAGE.FOR.DISPOSAL		1888.84	1719.23	2163.89	2224.21	1708.74	1887.76	1850.26	1666.67	1694.98	1971.82
RH_LLMW	RECEIVE.FOR.PROCESSING		4441.54	4235.73	4774.56	5054.23	4928.92	5769.45	6153.19	5379.45	5511.04	6746.52
RH_LLMW	REMOVE.CONTAINER		4441.54	4235.73	4774.56	5054.23	4928.92	5769.45	6153.19	5379.45	5511.04	6746.52
RH_LLMW	REMOVE.PB.SHIELDING		2620.00	2600.00	1640.00	1881.55	1480.00	1460.78	800.00	200.00	421.55	
RH_LLMW	RH.CASK.LOAD.IN		4441.54	4235.73	4774.56	5054.23	4928.92	5769.45	6153.19	5379.45	5511.04	6746.52
RH_LLMW	RH.CASK.LOAD.OUT		1888.84	1719.23	2163.89	2224.21	1708.74	1887.76	1850.26	1666.67	1694.98	1971.82
RH_LLMW	SHIP.TO.LLMW.DISPOSAL		1888.84	1719.23	2163.89	2224.21	1708.74	1887.76	1850.26	1666.67	1694.98	1971.82
RH_LLMW	SIZE.REDUCE		656.61	695.86	732.17	849.40	725.22	796.67	854.42	771.40	832.73	965.57
RH_LLMW	SORT		944.42	859.62	1081.95	1112.10	854.37	943.88	925.13	833.33	847.49	985.91
RH_LLMW	STABILIZATION		944.42	859.62	1081.95	1112.10	854.37	943.88	925.13	833.33	847.49	985.91
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	85.00	141.60	141.60	141.60	141.60	56.70	28.30	14.20	64.46	61.66	61.66
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	3399.70	5382.70	7365.70	7082.50	6515.90	2266.60	1416.70	708.50	814.40	106.20	106.20
RH_TRU	ASSAY		406.08	279.95	214.22	144.78	240.39	245.46	227.07	617.35	545.51	663.77
RH_TRU	ENTERING.THE.SYSTEM	1.70	1.70	1.70	1.70	1.70	48.60	51.20	51.00	518.56	520.76	640.66
RH_TRU	FACILITY.WIPP		203.04	139.98	109.20	72.39	120.19	122.73	113.54	315.05	278.76	338.63
RH_TRU	FACILITY.WRAP.2B.IN		317.29	202.94	110.36	90.30	155.45	134.60	144.35	498.56	419.52	541.90
RH_TRU	FACILITY.WRAP.2B.OUT		203.04	139.98	109.20	72.39	120.19	122.73	113.54	315.05	278.76	338.63
RH_TRU	PACKAGE.FOR.TREATMENT		203.04	139.98	109.20	72.39	120.19	122.73	113.54	315.05	278.76	338.63
RH_TRU	RECEIVE.FOR.PROCESSING		317.29	202.94	110.36	90.30	155.45	134.60	144.35	498.56	419.52	541.90
RH_TRU	REMOVE.CONTAINER		338.40	233.29	175.04	120.65	200.32	204.55	189.23	503.84	444.60	541.90
RH_TRU	RESTRICTED.WASTE.MANAGEMENT				4.18					12.74	12.00	13.49
RH_TRU	RH.CASK.LOAD.IN		317.29	202.94	110.36	90.30	155.45	134.60	144.35	498.56	419.52	541.90
RH_TRU	RH.CASK.LOAD.OUT		203.04	139.98	109.20	72.39	120.19	122.73	113.54	315.05	278.76	338.63
RH_TRU	SHIP.TO.STORAGE		203.04	139.98	109.20	72.39	120.19	122.73	113.54	315.05	278.76	338.63
RH_TRU	SIZE.REDUCE		176.34	116.84	52.18	36.00	68.40	69.44	77.46	263.19	216.63	268.15
RH_TRU	SORT		203.04	139.98	105.02	72.39	120.19	122.73	113.54	302.30	266.76	325.14
RH_TRU_SUSPECT	DECON.OVERPACK		42.85	61.63	131.31	61.63	91.11	142.03	91.11	10.71	50.91	
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	25.33	
RH_TRU_SUSPECT	FACILITY.WRAP.2B.IN		63.96	91.98	195.99	91.98	135.99	211.98	135.99	15.99	75.99	
RH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT		42.85	61.63	131.31	61.63	91.11	142.03	91.11	10.71	50.91	
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING		63.96	91.98	195.99	91.98	135.99	211.98	135.99	15.99	75.99	
RH_TRU_SUSPECT	RECEIVE.OVERPACK		63.96	91.98	195.99	91.98	135.99	211.98	135.99	15.99	75.99	

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
CS_CAPSULES	RECEIVE.FOR.PROCESSING								2.38			
CS_CAPSULES	RH.CASK.LOAD.IN								2.38			
CS_CAPSULES	RH.CASK.LOAD.OUT								2.38			
CS_CAPSULES	SHIP.TO.STORAGE								2.38			
MISC_SOURCES	ENTERING.THE.SYSTEM											
RH_LLMW	ENTERING.THE.SYSTEM	7430.34	7574.30	3148.90	2735.63	2419.13	2688.92	3018.21	2827.36			
RH_LLMW	FACILITY.LLMW.DISPOSAL	2018.21	1969.13	2134.61	1776.66	2011.28	1737.55	1628.77	1619.66			
RH_LLMW	FACILITY.WRAP.2B.IN	6713.87	6926.83	5111.85	4762.55	5147.56	4956.88	4969.93	5175.70			
RH_LLMW	FACILITY.WRAP.2B.OUT	2018.21	1969.13	2134.61	1776.66	2011.28	1737.55	1628.77	1619.66			
RH_LLMW	LLMW.PROCESSING	6693.87	6926.83	5131.85	4762.55	5147.56	4956.88	4969.93	5175.70			
RH_LLMW	PACKAGE.FOR.DISPOSAL	2018.21	1969.13	2134.61	1776.66	2011.28	1737.55	1628.77	1619.66			
RH_LLMW	RECEIVE.FOR.PROCESSING	6693.87	6926.83	5131.85	4762.55	5147.56	4956.88	4969.93	5175.70			
RH_LLMW	REMOVE.CONTAINER	6693.87	6926.83	5131.85	4762.55	5147.56	4956.88	4969.93	5175.70			
RH_LLMW	REMOVE.PB.SHIELDING	300.00		520.00	680.00	320.00	520.00	440.00	320.00			
RH_LLMW	RH.CASK.LOAD.IN	6693.87	6926.83	5131.85	4762.55	5147.56	4956.88	4969.93	5175.70			
RH_LLMW	RH.CASK.LOAD.OUT	2018.21	1969.13	2134.61	1776.66	2011.28	1737.55	1628.77	1619.66			
RH_LLMW	SHIP.TO.LLMW.DISPOSAL	2018.21	1969.13	2134.61	1776.66	2011.28	1737.55	1628.77	1619.66			
RH_LLMW	SIZE.REDUCE	988.29	964.37	823.75	802.39	961.27	833.46	793.57	760.80			
RH_LLMW	SORT	1009.11	984.57	1067.31	888.33	1005.64	868.77	814.39	809.83			
RH_LLMW	STABILIZATION	1009.11	984.57	1067.31	888.33	1005.64	868.77	814.39	809.83			
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM	61.66	61.66	61.66	61.66	61.66	61.66	61.66				
RH_LLW_GTCIII	ENTERING.THE.SYSTEM	106.20	106.20	106.20	106.20	106.20	106.20	106.20	0.30			
RH_TRU	ASSAY	640.65	694.54	1031.90	1112.54	969.14	781.65	745.36	305.66			
RH_TRU	ENTERING.THE.SYSTEM	643.26	640.66	831.36	793.76	586.36	520.76	518.36	51.00			
RH_TRU	FACILITY.WIPP	326.70	353.64	521.95	514.27	442.57	397.20	391.43	237.58			
RH_TRU	FACILITY.WRAP.2B.IN	523.26	568.16	830.12	897.32	797.61	640.76	609.90	253.48			
RH_TRU	FACILITY.WRAP.2B.OUT	326.70	353.64	521.95	562.27	490.57	397.20	379.43	153.58			
RH_TRU	PACKAGE.FOR.TREATMENT	326.70	353.64	521.95	562.27	490.57	397.20	379.43	153.58			
RH_TRU	RECEIVE.FOR.PROCESSING	523.26	568.16	830.12	897.32	797.61	640.76	609.90	253.48			
RH_TRU	REMOVE.CONTAINER	523.26	568.16	849.92	917.12	797.61	640.76	609.90	253.48			
RH_TRU	RESTRICTED.WASTE.MANAGEMENT	12.74	12.74	12.00	12.00	12.00	12.74	13.49	1.49			
RH_TRU	RH.CASK.LOAD.IN	523.26	568.16	830.12	897.32	797.61	640.76	609.90	253.48			
RH_TRU	RH.CASK.LOAD.OUT	326.70	353.64	521.95	562.27	490.57	397.20	379.43	153.58			
RH_TRU	SHIP.TO.STORAGE	326.70	353.64	521.95	562.27	490.57	397.20	379.43	153.58			
RH_TRU	SIZE.REDUCE	269.59	292.15	323.19	312.63	371.58	312.21	311.58	129.45			
RH_TRU	SORT	313.95	340.90	509.95	550.27	478.57	384.45	365.94	152.09			
RH_TRU_SUSPECT	DECON.OVERPACK			40.20	40.20							
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM											
RH_TRU_SUSPECT	FACILITY.WRAP.2B.IN			60.00	60.00							
RH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT			40.20	40.20							
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			60.00	60.00							
RH_TRU_SUSPECT	RECEIVE.OVERPACK			60.00	60.00							

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
CS_CAPSULES	RECEIVE.FOR.PROCESSING			2.38
CS_CAPSULES	RH.CASK.LOAD.IN			2.38
CS_CAPSULES	RH.CASK.LOAD.OUT			2.38
CS_CAPSULES	SHIP.TO.STORAGE			2.38
MISC_SOURCES	ENTERING.THE.SYSTEM			15.00
RH_LLMW	ENTERING.THE.SYSTEM			96759.81
RH_LLMW	FACILITY.LLMW.DISPOSAL			33672.26
RH_LLMW	FACILITY.WRAP.2B.IN			96759.81
RH_LLMW	FACILITY.WRAP.2B.OUT			33672.26
RH_LLMW	LLMW.PROCESSING			96759.81
RH_LLMW	PACKAGE.FOR.DISPOSAL			33672.26
RH_LLMW	RECEIVE.FOR.PROCESSING			96759.81
RH_LLMW	REMOVE.CONTAINER			96759.81
RH_LLMW	REMOVE.PB.SHIELDING			16203.88
RH_LLMW	RH.CASK.LOAD.IN			96759.81
RH_LLMW	RH.CASK.LOAD.OUT			33672.26
RH_LLMW	SHIP.TO.LLMW.DISPOSAL			33672.26
RH_LLMW	SIZE.REDUCE			14807.96
RH_LLMW	SORT			16836.13
RH_LLMW	STABILIZATION			16836.13
RH_LLMW_GTCIII	ENTERING.THE.SYSTEM			1554.05
RH_LLW_GTCIII	ENTERING.THE.SYSTEM			41035.30
RH_TRU	ASSAY			9866.04
RH_TRU	ENTERING.THE.SYSTEM			7735.87
RH_TRU	FACILITY.WIPP			4998.83
RH_TRU	FACILITY.WRAP.2B.IN			7735.87
RH_TRU	FACILITY.WRAP.2B.OUT			4998.83
RH_TRU	PACKAGE.FOR.TREATMENT			4998.83
RH_TRU	RECEIVE.FOR.PROCESSING			7735.87
RH_TRU	REMOVE.CONTAINER			8112.02
RH_TRU	RESTRICTED.WASTE.MANAGEMENT			131.62
RH_TRU	RH.CASK.LOAD.IN			7735.87
RH_TRU	RH.CASK.LOAD.OUT			4998.83
RH_TRU	SHIP.TO.STORAGE			4998.83
RH_TRU	SIZE.REDUCE			3667.01
RH_TRU	SORT			4867.21
RH_TRU_SUSPECT	DECON.OVERPACK			763.70
RH_TRU_SUSPECT	ENTERING.THE.SYSTEM			379.95
RH_TRU_SUSPECT	FACILITY.WRAP.2B.IN			1139.85
RH_TRU_SUSPECT	FACILITY.WRAP.2B.OUT			763.70
RH_TRU_SUSPECT	RECEIVE.FOR.PROCESSING			1139.85
RH_TRU_SUSPECT	RECEIVE.OVERPACK			1139.85

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
RH TRU SUSPECT	REMOVE.OVERPACK											
RH TRU SUSPECT	RH.CASK.LOAD.IN											
RH TRU SUSPECT	SHIP.FOR.REUSE											
RH TRUM	ASSAY											
RH TRUM	ENTERING.THE.SYSTEM	448.47	124.40	124.40	167.68	149.59	158.64	167.68	178.68	201.30	205.82	4067.41
RH TRUM	FACILITY.WIPP											
RH TRUM	FACILITY.WRAP.2B.IN											
RH TRUM	FACILITY.WRAP.2B.OUT											
RH TRUM	PACKAGE.FOR.TREATMENT											
RH TRUM	RECEIVE.FOR.PROCESSING											
RH TRUM	REMOVE.CONTAINER											
RH TRUM	RESTRICTED.WASTE.MANAGEMENT											
RH TRUM	RH.CASK.LOAD.IN											
RH TRUM	RH.CASK.LOAD.OUT											
RH TRUM	SHIP.TO.STORAGE											
RH TRUM	SIZE.REDUCE											
RH TRUM	SORT											
SODIUM	ENTERING.THE.SYSTEM											
SR CAPSULES	ENTERING.THE.SYSTEM	1.12										
SR CAPSULES	FACILITY.CS.SR.IN											
SR CAPSULES	FACILITY.CS.SR.OUT											
SR CAPSULES	PACKAGE.FOR.DISPOSAL											
SR CAPSULES	RECEIVE.FOR.PROCESSING											
SR CAPSULES	RH.CASK.LOAD.IN											
SR CAPSULES	RH.CASK.LOAD.OUT											
SR CAPSULES	SHIP.TO.STORAGE											
UNIRRAD UR	ENTERING.THE.SYSTEM	12.02	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
RH_TRU_SUSPECT	REMOVE.OVERPACK		63.96	91.98	195.99	91.98	135.99	211.98	135.99	15.99	75.99	
RH_TRU_SUSPECT	RH.CASK.LOAD.IN		63.96	91.98	195.99	91.98	135.99	211.98	135.99	15.99	75.99	
RH_TRU_SUSPECT	SHIP.FOR.REUSE		42.85	61.63	131.31	61.63	91.11	142.03	91.11	10.71	50.91	
RH_TRUM	ASSAY		787.52	467.18	830.02	698.15	649.17	436.92	448.02	541.64	566.71	691.94
RH_TRUM	ENTERING.THE.SYSTEM	7736.54	7704.87	366.62	324.75	346.20	444.20	527.55	634.19	1004.52	1064.49	1259.17
RH_TRUM	FACILITY.WIPP		396.31	233.59	419.47	352.90	325.22	219.10	224.64	271.45	283.35	345.97
RH_TRUM	FACILITY.WRAP.2B.IN		3530.81	3332.52	2587.71	2826.73	2508.73	2275.89	1791.26	1063.75	1213.78	1188.79
RH_TRUM	FACILITY.WRAP.2B.OUT		396.31	233.59	419.47	352.90	325.22	219.10	224.64	271.45	283.35	345.97
RH_TRUM	PACKAGE.FOR.TREATMENT		396.31	233.59	419.47	352.90	325.22	219.10	224.64	271.45	283.35	345.97
RH_TRUM	RECEIVE.FOR.PROCESSING		3530.81	3312.52	2607.71	2806.73	2528.73	2255.89	1791.26	1083.75	1213.78	1168.79
RH_TRUM	REMOVE.CONTAINER		910.81	712.52	967.71	925.18	1048.73	795.12	991.26	883.75	792.23	1168.79
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT		5.10		8.92	7.65	1.27	1.27	1.27	1.27		
RH_TRUM	RH.CASK.LOAD.IN		3530.81	3312.52	2607.71	2806.73	2528.73	2255.89	1791.26	1083.75	1213.78	1168.79
RH_TRUM	RH.CASK.LOAD.OUT		396.31	233.59	419.47	352.90	325.22	219.10	224.64	271.45	283.35	345.97
RH_TRUM	SHIP.TO.STORAGE		396.31	233.59	419.47	352.90	325.22	219.10	224.64	271.45	283.35	345.97
RH_TRUM	SIZE.REDUCE		326.11	194.71	330.45	223.84	289.64	168.72	174.14	268.91	273.31	315.51
RH_TRUM	SORT		391.21	233.59	410.55	345.25	323.95	217.82	223.37	270.18	283.35	345.97
SODIUM	ENTERING.THE.SYSTEM				177.00							
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.CS.SR.IN											
SR_CAPSULES	FACILITY.CS.SR.OUT											
SR_CAPSULES	PACKAGE.FOR.DISPOSAL											
SR_CAPSULES	RECEIVE.FOR.PROCESSING											
SR_CAPSULES	RH.CASK.LOAD.IN											
SR_CAPSULES	RH.CASK.LOAD.OUT											
SR_CAPSULES	SHIP.TO.STORAGE											
UNIRRAD_UR	ENTERING.THE.SYSTEM	12.04										

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
RH_TRU_SUSPECT	REMOVE.OVERPACK			60.00	60.00							
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			60.00	60.00							
RH_TRU_SUSPECT	SHIP.FOR.REUSE			40.20	40.20							
RH_TRUM	ASSAY	781.80	709.66	603.10	683.74	676.63	760.46	695.65	493.35			
RH_TRUM	ENTERING.THE.SYSTEM	1281.59	1304.40	673.15	643.61	605.30	641.49	675.27	347.85			
RH_TRUM	FACILITY.WIPP	390.90	354.83	299.92	309.91	343.11	380.38	352.63	273.06			
RH_TRUM	FACILITY.WRAP.2B.IN	1480.43	1182.15	1456.96	1708.32	1250.08	1552.14	1490.67	1139.12			
RH_TRUM	FACILITY.WRAP.2B.OUT	390.90	354.83	301.55	341.87	338.32	382.78	347.82	246.68			
RH_TRUM	PACKAGE.FOR.TREATMENT	390.90	354.83	301.55	341.87	338.32	382.78	347.82	246.68			
RH_TRUM	RECEIVE.FOR.PROCESSING	1500.43	1182.15	1444.39	1720.89	1250.08	1552.14	1490.67	1139.12			
RH_TRUM	REMOVE.CONTAINER	1200.43	1182.15	924.39	1040.89	930.08	1032.14	1050.67	819.12			
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT						5.10					
RH_TRUM	RH.CASK.LOAD.IN	1500.43	1182.15	1444.39	1720.89	1250.08	1552.14	1490.67	1139.12			
RH_TRUM	RH.CASK.LOAD.OUT	390.90	354.83	301.55	341.87	338.32	382.78	347.82	246.68			
RH_TRUM	SHIP.TO.STORAGE	390.90	354.83	301.55	341.87	338.32	382.78	347.82	246.68			
RH_TRUM	SIZE.REDUCE	360.57	342.83	266.00	331.95	305.68	338.66	318.77	214.54			
RH_TRUM	SORT	390.90	354.83	301.55	341.87	338.32	377.68	347.82	246.68			
SODIUM	ENTERING.THE.SYSTEM											
SR_CAPSULES	ENTERING.THE.SYSTEM											
SR_CAPSULES	FACILITY.CS.SR.IN								1.12			
SR_CAPSULES	FACILITY.CS.SR.OUT								1.12			
SR_CAPSULES	PACKAGE.FOR.DISPOSAL								1.12			
SR_CAPSULES	RECEIVE.FOR.PROCESSING								1.12			
SR_CAPSULES	RH.CASK.LOAD.IN								1.12			
SR_CAPSULES	RH.CASK.LOAD.OUT								1.12			
SR_CAPSULES	SHIP.TO.STORAGE								1.12			
UNIRRAD_UR	ENTERING.THE.SYSTEM											

Table A.6-1
Alternative 5 Annual Throughput Requirements by Waste Class (in Cubic Meters)

WasteClass	Function	2027	2028	Total
RH_TRU_SUSPECT	REMOVE.OVERPACK			1139.85
RH_TRU_SUSPECT	RH.CASK.LOAD.IN			1139.85
RH_TRU_SUSPECT	SHIP.FOR.REUSE			763.70
RH_TRUM	ASSAY			11521.66
RH_TRUM	ENTERING.THE.SYSTEM			33579.83
RH_TRUM	FACILITY.WIPP			5776.76
RH_TRUM	FACILITY.WRAP.2B.IN			33579.82
RH_TRUM	FACILITY.WRAP.2B.OUT			5776.76
RH_TRUM	PACKAGE.FOR.TREATMENT			5776.76
RH_TRUM	RECEIVE.FOR.PROCESSING			33579.82
RH_TRUM	REMOVE.CONTAINER			17375.94
RH_TRUM	RESTRICTED.WASTE.MANAGEMENT			31.86
RH_TRUM	RH.CASK.LOAD.IN			33579.82
RH_TRUM	RH.CASK.LOAD.OUT			5776.76
RH_TRUM	SHIP.TO.STORAGE			5776.76
RH_TRUM	SIZE.REDUCE			5044.33
RH_TRUM	SORT			5744.89
SODIUM	ENTERING.THE.SYSTEM			177.00
SR_CAPSULES	ENTERING.THE.SYSTEM			1.12
SR_CAPSULES	FACILITY.CS.SR.IN			1.12
SR_CAPSULES	FACILITY.CS.SR.OUT			1.12
SR_CAPSULES	PACKAGE.FOR.DISPOSAL			1.12
SR_CAPSULES	RECEIVE.FOR.PROCESSING			1.12
SR_CAPSULES	RH.CASK.LOAD.IN			1.12
SR_CAPSULES	RH.CASK.LOAD.OUT			1.12
SR_CAPSULES	SHIP.TO.STORAGE			1.12
UNIRRAD_UR	ENTERING.THE.SYSTEM			144.46

Table A.6-2
Alternative 5 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	1994	1995	1996	1997	1998	1999	2000	2001	2002
RH Storage										
STORAGE.RH.DISP	CANISTERS									
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	1419.55	2746.52	4060.99	5853.46	7319.88	8849.02	10402.89	12176.20	14153.07
STORAGE.RH.PROC	RH_LLMW_GTCIII	14.20	14.20	14.20	14.20	14.20	14.20	14.20	42.50	70.80
STORAGE.RH.PROC	RH_LLW_GTCIII	24.30	24.60	24.90	25.20	25.50	25.80	26.10	309.70	1159.90
STORAGE.RH.PROC	RH_TRU	1084.19	1187.59	1226.09	1227.79	1254.69	1279.49	1304.29	1305.99	1307.69
STORAGE.RH.PROC	RH_TRUM	448.47	572.86	697.26	864.94	1014.53	1173.17	1340.85	1519.53	1720.83
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**3009.20**	**4564.27**	**6041.94**	**8004.09**	**9647.30**	**11360.18**	**13106.83**	**15372.42**	**18430.79**
Total RH Storage		**3009.20**	**4564.27**	**6041.94**	**8004.09**	**9647.30**	**11360.18**	**13106.83**	**15372.42**	**18430.79**
CH Storage										
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
Total CH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
STORAGE.CH.PROC	CH_LLMW	725.27	747.17	769.07	790.97	812.88	834.77	856.68	878.57	900.48
STORAGE.CH.PROC	CH_LLMW_GTCIII	50.20	52.30	54.60	87.50	120.39	214.48	262.67	308.56	446.25
STORAGE.CH.PROC	CH_LLW_GTCIII								283.30	1133.20
STORAGE.CH.PROC	CH_TRU	178.94	317.70	428.51	441.19	453.76	490.80	706.45	713.18	756.91
STORAGE.CH.PROC	CH_TRUM	0.72	1.12	1.73	1.93	2.08	2.23	6.58	6.89	7.20
STORAGE.CH.PROC	SODIUM									
STORAGE.CH.PROC	UNIRRAD_UR	12.02	24.06	36.10	48.14	60.18	72.22	84.26	96.30	108.34
Total CH Storage Prior to Processing		**191.68**	**342.88**	**466.34**	**491.26**	**516.02**	**565.25**	**797.29**	**1099.67**	**2005.65**
Total CH Storage		**191.68**	**342.88**	**466.34**	**491.26**	**516.02**	**565.25**	**797.29**	**1099.67**	**2005.65**
Grand Total		**3200.88**	**4907.16**	**6508.29**	**8495.35**	**10163.32**	**11925.44**	**13904.12**	**16472.09**	**20436.44**

Table A.6-2
Alternative 5 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2012	2013	2014	2015	2016	2017	2018	2019	2020
RH Storage										
STORAGE.RH.DISP	CANISTERS	1353.00	1804.00	2255.00	2706.00	3157.00	3608.00	4059.00	4510.00	4961.00
STORAGE.RH.DISP	CS_CAPSULES									
STORAGE.RH.DISP	RH_TRU								48.00	96.00
STORAGE.RH.DISP	RH_TRUM							1.63	33.59	28.79
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**1353.00**	**1804.00**	**2255.00**	**2706.00**	**3157.00**	**3608.00**	**4060.63**	**4591.59**	**5085.79**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	10125.33	10453.05	11481.71	11922.37	12638.84	13286.31	11323.36	9296.44	6568.02
STORAGE.RH.PROC	RH_LLMW_GTCIII	934.70	999.16	1060.81	1122.46	1184.12	1245.77	1307.43	1369.09	1430.74
STORAGE.RH.PROC	RH_LLW_GTCIII	39264.80	40079.20	40185.40	40291.60	40397.80	40504.00	40610.20	40716.40	40822.60
STORAGE.RH.PROC	RH_TRU	315.10	335.10	436.34	535.10	655.10	727.59	728.83	625.27	414.02
STORAGE.RH.PROC	RH_TRUM	5225.34	5166.11	5016.82	5087.21	4888.37	5010.63	4226.82	3162.10	2517.32
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**55883.77**	**57051.11**	**58199.58**	**58977.24**	**59782.73**	**60792.80**	**58215.14**	**55187.80**	**51771.19**
Total RH Storage		**57236.77**	**58855.11**	**60454.58**	**61683.24**	**62939.73**	**64400.80**	**62275.77**	**59779.39**	**56856.98**
CH Storage										
STORAGE.CH.DISP	CH_TRU								63.68	75.68
STORAGE.CH.DISP	CH_TRUM							12.00	24.00	48.00
Total CH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**12.00**	**87.68**	**123.68**
STORAGE.CH.PROC	CH_LLMW	461.50	394.93	368.23	278.93	232.94	232.94	223.44	194.49	124.80
STORAGE.CH.PROC	CH_LLMW_GTCIII	2113.32	2364.79	2613.46	2862.13	3095.50	3328.87	3546.94	3765.02	3967.80
STORAGE.CH.PROC	CH_LLW_GTCIII	39235.10	40181.71	40420.13	40658.54	40896.95	41135.37	41373.78	41612.19	41850.61
STORAGE.CH.PROC	CH_TRU	261.54	401.54	641.54	831.31	952.51	1108.29	982.60	865.87	791.64
STORAGE.CH.PROC	CH_TRUM	3.45	203.45	363.55	587.55	820.75	1049.95	1120.24	1063.52	847.52
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total CH Storage Prior to Processing		**39821.55**	**41108.17**	**41746.68**	**42398.86**	**42991.68**	**43615.08**	**43798.08**	**43863.05**	**43811.23**
Total CH Storage		**39821.55**	**41108.17**	**41746.68**	**42398.86**	**42991.68**	**43615.08**	**43810.08**	**43950.73**	**43934.91**
Grand Total		**97058.32**	**99963.28**	**102201.26**	**104082.10**	**105931.40**	**108015.88**	**106085.85**	**103730.12**	**100791.90**

Table ..6-2
Alternative 5 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2003	2004	2005	2006	2007	2008	2009	2010	2011
RH Storage										
STORAGE.RH.DISP	CANISTERS									
STORAGE.RH.DISP	CS_CAPSULES								451.00	902.00
STORAGE.RH.DISP	RH_TRU									
STORAGE.RH.DISP	RH_TRUM									
STORAGE.RH.DISP	SR_CAPSULES									
Total RH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**451.00**	**902.00**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	16170.65	18967.64	21598.60	19596.23	18083.95	15926.60	13921.50	12547.61	11046.31
STORAGE.RH.PROC	RH_LLMW_GTCIII	99.10	184.10	269.10	410.70	552.30	693.90	835.50	892.20	920.50
STORAGE.RH.PROC	RH_LLW_GTCIII	2576.60	5126.50	8526.20	13908.90	21274.60	28357.10	34873.00	37139.60	38556.30
STORAGE.RH.PROC	RH_TRU	1309.39	1311.09	1312.79	997.20	795.96	687.30	598.70	491.85	408.45
STORAGE.RH.PROC	RH_TRUM	1926.65	5994.06	13730.60	17904.66	14938.75	12675.79	10195.27	8130.75	6382.40
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Processing		**22100.89**	**31601.89**	**45455.78**	**52836.19**	**55664.06**	**58359.19**	**60442.47**	**59220.50**	**57332.45**
Total RH Storage		**22100.89**	**31601.89**	**45455.78**	**52836.19**	**55664.06**	**58359.19**	**60442.47**	**59671.50**	**58234.45**
CH Storage										
STORAGE.CH.DISP	CH_TRU									
STORAGE.CH.DISP	CH_TRUM									
Total CH Storage Prior to Disposal		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
STORAGE.CH.PROC	CH_LLMW	922.38	944.27	966.17	871.76	788.28	665.16	567.16	515.61	474.10
STORAGE.CH.PROC	CH_LLMW_GTCIII	614.52	793.61	942.10	1147.19	1352.28	1572.67	1793.05	1928.54	2035.63
STORAGE.CH.PROC	CH_LLW_GTCIII	2549.60	5099.20	8498.60	13881.00	21246.40	28328.60	34844.20	37110.50	38526.90
STORAGE.CH.PROC	CH_TRU	812.88	851.06	887.19	814.89	747.78	673.90	630.27	440.48	360.48
STORAGE.CH.PROC	CH_TRUM	7.51	8.46	10.68	19.28	13.98	11.45	11.05	9.98	12.05
STORAGE.CH.PROC	SODIUM						177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	120.38	132.42	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total CH Storage Prior to Processing		**3490.38**	**6091.14**	**9540.94**	**14859.63**	**22152.63**	**29335.41**	**35806.98**	**37882.41**	**39220.89**
Total CH Storage		**3490.38**	**6091.14**	**9540.94**	**14859.63**	**22152.63**	**29335.41**	**35806.98**	**37882.41**	**39220.89**
Grand Total		**25591.26**	**37693.03**	**54996.72**	**67695.82**	**77816.68**	**87694.60**	**96249.44**	**97553.92**	**97455.34**

Table A.6-2
Alternative 5 Annual Storage Requirements by Storage Facility (in Cubic Meters)

StorageFacility	WasteClass	2021	2022	2023	2024	2025	2026	2027	2028
RH Storage									
STORAGE.RH.DISP	CANISTERS	5412.00	5863.00	6314.00	6765.00	7216.00	7667.00	8118.00	8569.00
STORAGE.RH.DISP	CS_CAPSULES			2.38	2.38	2.38	2.38	2.38	2.38
STORAGE.RH.DISP	RH_TRU	96.00	84.00						
STORAGE.RH.DISP	RH_TRUM	31.19	26.38						
STORAGE.RH.DISP	SR_CAPSULES			1.12	1.12	1.12	1.12	1.12	1.12
Total RH Storage Prior to Disposal		**5539.19**	**5973.38**	**6317.50**	**6768.50**	**7219.50**	**7670.50**	**8121.50**	**8572.50**
STORAGE.RH.PROC	CS_CAPSULES	2.38	2.38						
STORAGE.RH.PROC	MISC_SOURCES	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
STORAGE.RH.PROC	RH_LLMW	4300.05	2348.34						
STORAGE.RH.PROC	RH_LLMW_GTCIII	1492.39	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05	1554.05
STORAGE.RH.PROC	RH_LLW_GTCIII	40928.80	41035.00	41035.30	41035.30	41035.30	41035.30	41035.30	41035.30
STORAGE.RH.PROC	RH_TRU	294.02	202.48						
STORAGE.RH.PROC	RH_TRUM	1606.66	791.27						
STORAGE.RH.PROC	SR_CAPSULES	1.12	1.12						
Total RH Storage Prior to Processing		**48640.43**	**45949.64**	**42604.35**	**42604.35**	**42604.35**	**42604.35**	**42604.35**	**42604.35**
Total RH Storage		**54179.62**	**51923.02**	**48921.85**	**49372.85**	**49823.85**	**50274.85**	**50725.85**	**51176.85**
CH Storage									
STORAGE.CH.DISP	CH_TRU	97.78	105.89						
STORAGE.CH.DISP	CH_TRUM	60.00	48.00						
Total CH Storage Prior to Disposal		**157.78**	**153.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
STORAGE.CH.PROC	CH_LLMW	89.82	38.97						
STORAGE.CH.PROC	CH_LLMW_GTCIII	4170.58	4373.35	4375.65	4375.65	4375.65	4375.65	4375.65	4375.65
STORAGE.CH.PROC	CH_LLW_GTCIII	42089.02	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44	42327.44
STORAGE.CH.PROC	CH_TRU	701.73	582.29						
STORAGE.CH.PROC	CH_TRUM	809.30	588.10						
STORAGE.CH.PROC	SODIUM	177.00	177.00	177.00	177.00	177.00	177.00	177.00	177.00
STORAGE.CH.PROC	UNIRRAD_UR	144.46	144.46	144.46	144.46	144.46	144.46	144.46	144.46
Total CH Storage Prior to Processing		**43921.52**	**43819.29**	**42648.90**	**42648.90**	**42648.90**	**42648.90**	**42648.90**	**42648.90**
Total CH Storage		**44079.30**	**43973.18**	**42648.90**	**42648.90**	**42648.90**	**42648.90**	**42648.90**	**42648.90**
Grand Total		**98258.92**	**95896.19**	**91570.75**	**92021.75**	**92472.75**	**92923.75**	**93374.75**	**93825.75**