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Revision 1
UC-630

Hanford Facility Dangerous Waste Permit Application, Central Waste Complex

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A-6001-401 (10/97)

Foreword

HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION, CENTRAL WASTE COMPLEX

FOREWORD

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (document number DOE/RL-91-28) and a Unit-Specific Portion. The scope of the Unit-Specific Portion is limited to Part B permit application documentation submitted for individual, 'operating' treatment, storage, and/or disposal units, such as the Central Waste Complex (this document, DOE/RL-91-17).

Both the General Information and Unit-Specific portions of the *Hanford Facility Dangerous Waste Permit Application* address the content of the Part B permit application guidance prepared by the Washington State Department of Ecology (Ecology 1996) and the U.S. Environmental Protection Agency (40 Code of Federal Regulations 270), with additional information needs defined by the *Hazardous and Solid Waste Amendments* and revisions of Washington Administrative Code 173-303. For ease of reference, the Washington State Department of Ecology alpha-numeric section identifiers from the permit application guidance documentation (Ecology 1996) follow, in brackets, the chapter headings and subheadings. A checklist indicating where information is contained in the Central Waste Complex permit application documentation, in relation to the Washington State Department of Ecology guidance, is located in the Contents Section.

Documentation contained in the General Information Portion is broader in nature and could be used by multiple treatment, storage, and/or disposal units (e.g., the glossary provided in the General Information Portion). Wherever appropriate, the Central Waste Complex permit application documentation makes cross-reference to the General Information Portion, rather than duplicating text.

Information provided in this Central Waste Complex permit application documentation is current as of May 1998.

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Contents

DOCUMENT CONTENTS

APPENDICES

APPENDICES (cont)

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			**Force**		
pounds per square inch	6.895	kilopascals	kilopascals	1.4504×10^{-4}	pounds per square inch

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

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Application Checklist

Complete this checklist by providing the facility name and indicating where the listed material has been placed in the application. This is particularly important when the application does not closely follow the outline of the checklist and guidance.

Include the completed checklist with the Dangerous Waste Permit application.

Facility name Central Waste Complex

Date Application Received ______________________

State of Washington Part B Permit Application Review Checklist for Treatment and Storage in Tanks and Containers		Technically Adequate?	Location in Application
A.	**Part A Form**		Chapter 1.0
B.	**Facility Description and General Provisions**		2.0
B-1	General Description		2.1
B-1(a)	Facility Description		2.1
B-1(b)	Construction Schedule		2.1.10
B-2	Topographic Map		2.2
B-2a	General Requirements		2.2
B-2b	Additional Requirements for Land Disposal Facilities	Not Applicable	Not Applicable
B-3	Seismic Consideration		N/A
B-4	Traffic Information		2.3
C.	**Waste Analysis**		3.0
C-1	Chemical, Biological and Physical Analyses		3.1
C-1a C-1b C-1c	Waste In Piles Landfilled Wastes Wastes Incinerated and Wastes Used in Performance Tests	Not Applicable	Not Applicable
C-2	Waste Analysis Plan		3.2 and Appendix 3A

	Technically Adequate?	Location in Application
C-2a Detailed Chemical, Physical, and/or Biological Analysis		Appendix 3A
C-2a(1) Parameters and Rationale		Appendix 3A
C-2a(2) Analytical Methods		Appendix 3A
C-2a(3) Generator-Supplied Analyses		Appendix 3A
C-2b Additional Requirements for Wastes Generated Off-site		Appendix 3A
C-2b(1) Parameters and Rationale to Confirm Identity of Off-site Waste		Appendix 3A
C-2b(2) Analytical Methods to Confirm Identity of Off-site Waste		Appendix 3A
C-2b(3) Representative Sampling of Incoming Off-site Wastes		Appendix 3A
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C-3 Manifest System		Appendix 3A
C-3a Procedures for Receiving Shipments		Appendix 3A
C-3b Response to Significant Discrepancies		Appendix 3A
C-3c Provisions for Non-acceptance of Shipment		Appendix 3A
C-3c(1) Non-acceptance of Undamaged Shipment		Appendix 3A
C-3c(2) Activation of Contingency Plan for Damaged Shipment		Appendix 3A
C-4 Tracking System		Appendix 3A

	Technically Adequate?	Location in Application
D. Process Information		4.0
D-1 Containers		4.1
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D-1b Container Management Practices		4.1.1.2
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D-1d(1)(a) System Design		4.1.2.1
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D-1d(2) Removal of Liquids from Containment System		4.1.3
D-1e Demonstration that Containment Is Not Required Because Containers Do Not Contain Free Liquids, Wastes That Exhibit Ignitability or Reactivity, or Wastes Designated F020 - 023, F026, or F027		4.2
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D-1f(1) Management of Certain Reactive Wastes in Containers		4.3.1
D-1f(2) Management of Ignitable and Certain Other Reactive Wastes in Containers		4.3.2

	Technically Adequate?	Location in Application
D-1f(3) Design of Areas to Manage Incompatible Wastes		4.3.3
D-2 Tank Systems		N/A
D-2a Design, Installation and Assessment of Tanks Systems		N/A
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D-2a(2) Integrity Assessments		N/A
D-2a(3) Additional Requirements for Existing Tanks		N/A
D-2a(4) Additional Requirements for New Tanks		N/A
D-2a(5) Additional Requirements for New On-ground or Underground Tanks		N/A
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N/A D-2b(1) Requirements for All Tank Systems		N/A
D-2b(2) Additional Requirements for Specific Types of Systems		N/A
D-2b(2)(a) Vault Systems		N/A
D-2b(2)(b) Double-walled Tanks		N/A
D-2b(2)(c) Ancillary Equipment		N/A
D-2c Variances from Secondary Containment Requirements		N/A
D-2d Tank Management Practices		N/A
D-2e Labels or Signs		N/A

	Technically Adequate?	Location in Application
D-2f Air Emissions		N/A
D-2g Management of Ignitable or Reactive Wastes in Tank Systems		N/A
D-2h Management of Incompatible Wastes in Tank Systems		N/A
D-3 Waste Piles D-4 Surface Impoundments D-5 Incinerators D-6 Landfills D-7 Land Treatment	Not Applicable	Not Applicable
D-8 Air Emissions Control		4.4
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D-8a(1) Applicability of Subpart AA Standards		N/A
D-8a(1)(a) Process Vents Subject to Subpart AA Standards		N/A
D-8a(1)(b) Process Vents Not Subject to Subpart AA Standards		N/A
D-8a(1)(c) Re-evaluating Applicability of Subpart AA Standards		N/A
D-8a(2) Process Vents - Demonstrating Compliance		N/A
D-8a(2)(a) The Basis for Meeting Limits/Reductions		N/A
D-8a(2)(b) Demonstrating Compliance via Selected Method		N/A
D-8a(2)(c) Design Information and Operating Parameters for Closed Vent Systems and Control Devices		N/A
D-8a(2)(d) Re-evaluating Compliance with Subpart AA Standards		N/A
D-8b Equipment Leaks		N/A

		Technically Adequate?	Location in Application
D-8b(1)	Applicability of Subpart BB Standards		N/A
D-8b(1)(a)	Equipment Subject to Subpart BB		N/A
D-8b(1)(b)	Re-evaluating Applicability of Subpart BB Standards		N/A
D-8b(2)	Equipment Leaks - Demonstrating Compliance		N/A
D-8b(2)(a)	Procedures for Identifying Equipment Location and Method of Compliance, Marking Equipment, and Ensuring Records are Up-to-date		N/A
D-8b(2)(b)	Demonstrating Compliance with D-8b(1)(a) and (2)(a) Procedures		N/A
D-8b(2)(c)	Closed Vent Systems or Control Devices: Showing Compliance with Emission Reduction Standards		N/A
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D-10	Groundwater Monitoring for Land-based Units	Not Applicable	Not Applicable

		Technically Adequate?	Location in Application
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F-2d(2)	Tank System Inspections and Corrective Actions		N/A
F-2d(2)(a)	Tank System Inspections		N/A

	Technically Adequate?	Location in Application
F-2d(2)(b) Tank Systems - Corrective Actions		N/A
F-2d(3) Storage of Ignitable or Reactive Wastes		N/A
F-2d(4) Air Emissions Control and Detection - Inspections, Monitoring, and Corrective Actions		N/A
F-2d(4)(a) Process Vents		N/A
F-2d(4)(b) Equipment Leaks		N/A
F-2d(4)(c) Tanks and Containers		N/A
F-2d(5) Waste Pile Inspection F-2d(6) Surface Impoundment Inspection F-2d(7) Incinerator Inspection F-2d(8) Landfill Inspection F-2d(9) Land Treatment Facility Inspection	Not Applicable	Not Applicable
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F-5b(2) Incompatible Wastes In Containers or Tanks		N/A

		Technically Adequate?	Location in Application
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		Technically Adequate?	Location in Application
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I-1d I-1e	Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment, and Miscellaneous Units Closure of Landfill Units	Not Applicable	Not Applicable
I-1f	Schedule for Closure		11.2

		Technically Adequate?	Location in Application
I-1g	Extension for Closure Time		N/A
I-1h	Closure Cost Estimate		N/A
I-1i	Financial Assurance Mechanism for Closure		N/A
I-2	Notice in Deed of Already Closed Disposal Units		N/A
I-3	Post-Closure Plan		N/A
I-4	Liability Requirements		N/A
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I-4b	Coverage for Nonsudden Accidental Occurrences		N/A
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CONTENTS

1.0 PART A [A]

The Part A, Form 3, covers the Central Waste Complex (CWC). The original Part A, Form 3, (Revision 0) was submitted May 19, 1988 and included the Radioactive Mixed Waste Storage Facility and Waste Receiving and Processing Facility.

Revision 1, submitted October 22, 1990, was prepared to ensure agreement between annual waste quantities as identified in the Part A, Form 3 (Revision 0), and the Hanford Site annual dangerous waste report submitted in March 1990 to the Washington State Department of Ecology. Two dangerous waste numbers (D012 and D016) and 26 new dangerous waste numbers, based on the U.S. Environmental Protection Agency *Final Rule Change*, "Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions" (55 FR 61), were added.

Revision 2, submitted October 7, 1994, added dangerous waste numbers (F039, P057, U248, U249, U328, U353, and U359) and removed dangerous waste numbers (U230, WC01, P052, and U013). Revision 3, submitted January 25, 1995, was revised to separate the CWC and the Waste Receiving and Processing Facility Part A, Form 3s from the former Hanford CWC Part A, Form 3.

Revision 3 also added 23 dangerous waste numbers to existing Process Codes S01 (container-storage) and T04 (treatment-other).

Revision 4, submitted October 1, 1996, identified a new co-operator of CWC .

Revision 5, submitted with this permit application documentation, was revised to clarify the treatment process and redefine the treatment, storage, and/or disposal (TSD) unit boundary. Revision 5 also removed three dangerous waste numbers and added 61 dangerous waste numbers per the revised federal and state regulations. Revision 5 also was revised to clarify the names of various storage buildings/modules.

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Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 character/inch).

FORM 3

DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER

W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO.	DAY	YR.
0 3	2 2	4 3*

FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

* The date construction of the Hanford Facility commenced.

☐ 2. NEW FACILITY *(Complete item below)*

MO.	DAY	YR.

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

[X] 1. FACILITY HAS AN INTERIM STATUS PERMIT

[X] 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES - CODES AND CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numbers X-1 and X-2 below)*: *A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons.* The facility also has an incinerator that can burn up to 20 gallons per hour.

LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G	
X-2	T 0 3	20	E	
1	S 0 1	22,710,000	L	
2	T 0 4	45,420	V	
3				
4				
5				
6				
7				
8				
9				
10				

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CA

The Central Waste Complex (CWC) began waste management operations in August of 1988.

T04 (Treatment-Other)

Treatment available at the CWC includes the absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation of solid waste matrices. The maximum treatment design capacity at the CWC is 45,420 liters (11,999 gallons) per day.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account th appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity o the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* - A facility will treat and dispose of an estimated 900 pounds per yea of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per yea of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2			T 0 3 D 8 0	included with above

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (entered from page 1)

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	D001	4,600	K	S01 T04	Storage-Container/Treatment-Other
2	D002	1,000			
3	D003				
4	D004	300			
5	through				
6	D007				
7	D008	45,400			
8	D009	300			
9	through				
10	D043				
11	WSC2				
12	WT01	363,200			
13	WT02	36,000			
14	WP01	3,700			
15	through				
16	WP03				
17	W001	10,000			
18	F001	3,700			
19	through				
20	F005				
21	F020				
22	F021	300			
23	through				
24	F023				
25					
26					

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (entered from page 1)

W A 7 8 9 0 0 0 8 9 6 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F026	300	K	S01	T04			Storage-Container/Treatment-Other
2	through							
3	F028							
4	F039							
5	U001							
6	through							
7	U012							
8	U014							
9	through							
10	U039							
11	U041							
12	through							
13	U053							
14	U055							
15	through							
16	U064							
17	U066							
18	through							
19	U099							
20	U101							
21	through							
22	U103							
23	U105							
24	through							
25	U138							
26								

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

NUMBER (entered from page 1)

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U140	300	K	S01	T04			Storage-Container/Treatment-Other
2	through							
3	U174							
4	U176							
5	through							
6	U194							
7	U196							
8	U197							
9	U200							
10	through							
11	U223							
12	U225							
13	through							
14	U228							
15	U230							
16	through							
17	U240							
18	U242							
19	through							
20	U244							
21	U246							
22	through							
23	U249							
24	U271							
25								
26								

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (entered from page 1)

W A 7 8 9 0 0 0 8 8 6 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U277	300	K	S01	T04			Storage-Container/Treatment-Othe
2	through							
3	U280							
4	U328							
5	U353							
6	U359							
7	U364							
8	through							
9	U367							
10	U372							
11	U373							
12	U375							
13	through							
14	U379							
15	U381							
16	through							
17	U387							
18	U389							
19	through							
20	U396							
21	U400							
22	through							
23	U404							
24	U407							
25								
26								

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER (entered from page 1)

[illegible]	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	U409	300	K	S01 T04	Storage-Container/Treatment-Other
2	through				
3	U411				
4	P001				
5	through				
6	P018				
7	P020				
8	through				
9	P024				
10	P026				
[illegible]	through				
12	P031				
13	P033				
14	P034				
15	P036				
16	through				
17	P051				
18	P054				
19	P056				
20	through				
21	P060				
22	P062				
23	through				
[illegible]	[illegible]078				
25	P081				
26	P082				

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I.D. NUMBER *(entered from page 1)*

W A 7 8 9 0 0 0 8 9 6 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P084	300	K	S01 T04	Storage-Container/Treatment-Othe
2	P085				
3	P087				
4	through				
5	P089				
6	P092				
7	through				
8	P099				
9	P101				
10	through				
11	P116				
12	P118				
13	through				
14	P123				
15	P127				
16	P128				
17	P185				
18	P188				
19	through				
20	P192				
21	P194				
22	P196				
23	through				
24	P199				
25					
26					

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P201	300	K	S01	T04			Storage-Container/Treatment-Other
2	through	↓	↓	↓	↓			↓
3	P205	↓	↓	↓	↓			Included With Above
4								
5								
6								
7								
8								
9								
11								
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22								
23								
25								
26								

Continued from the front.

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS Refer to attached photograph(s).

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawing(s) and photograph(s).

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[x] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
John D. Wagoner, Manager U.S. Department of Energy Richland Operations Office	L.K. Piper for	5/27/98

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

 CONTINUE ON PAGE 5

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

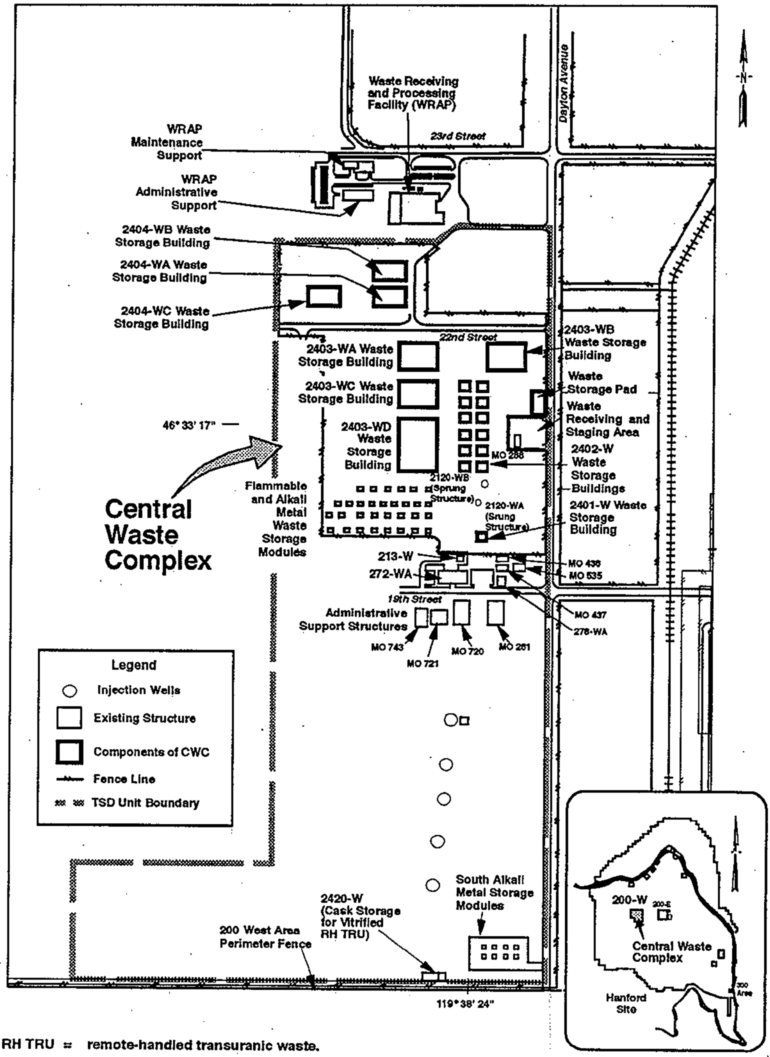
Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

Date 5/22/98

Co-operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

Date May 14, 1998

Central Waste Complex Site Plan



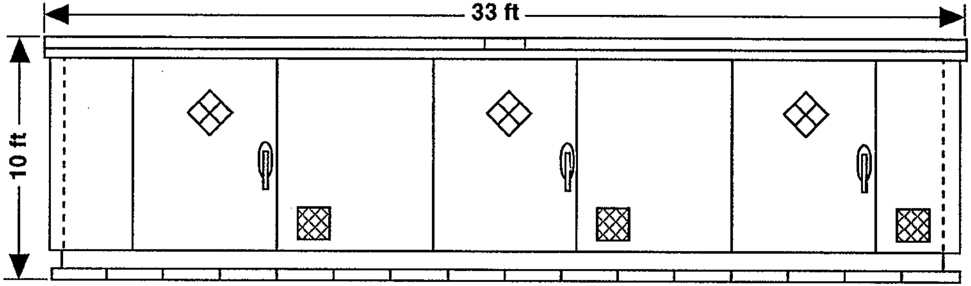
RH TRU = remote-handled transuranic waste.

Not to scale.

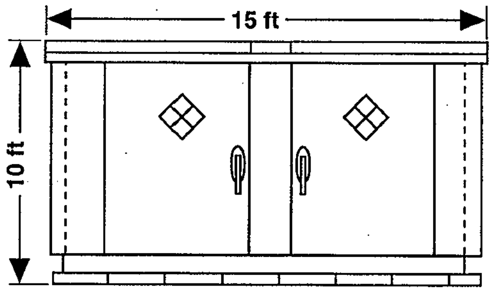
Refer to topographic map (H-13-000003) for detail.

H98040178.11R1

Typical Large Waste Storage Module
Front View



Typical Small Waste Storage Module
Front View

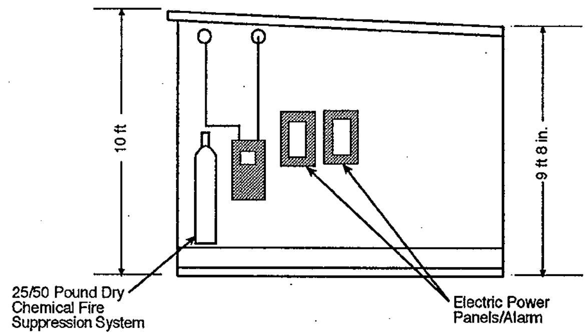


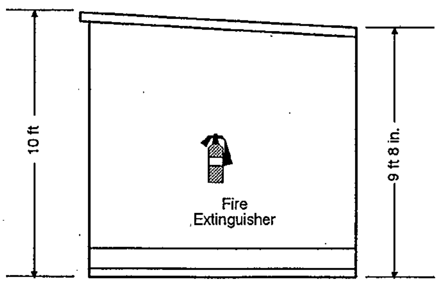
Note: To convert feet to meters, multiply by 0.3048.

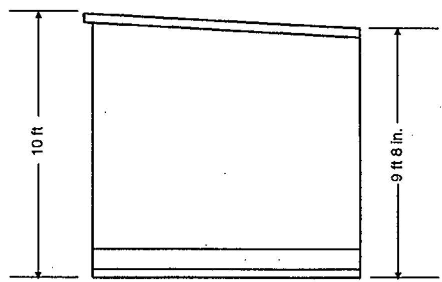
H98040178.7

Flammable and Alkali Metal Waste Storage Module

Side View





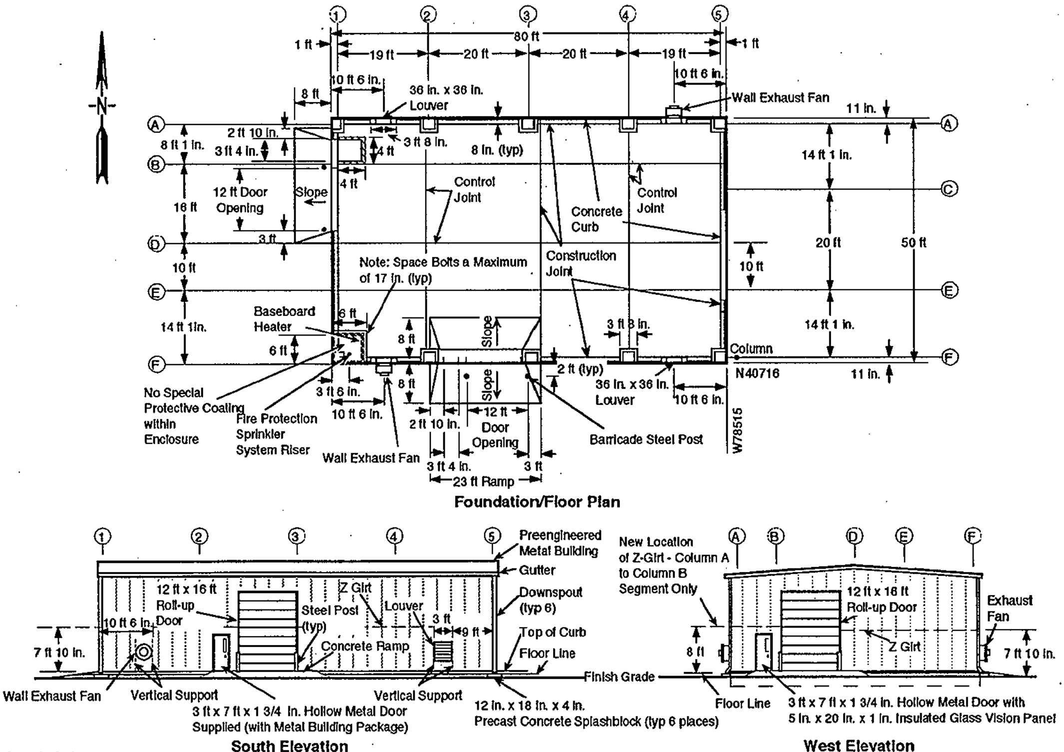


Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.
To convert to pounds to kilograms, multiply by 0.453.
Lights, electrical panels, and fire suppression systems have been deactivated in selected modules.

H98010038.1R1

2401-W Waste Storage Building

Plan and Elevations

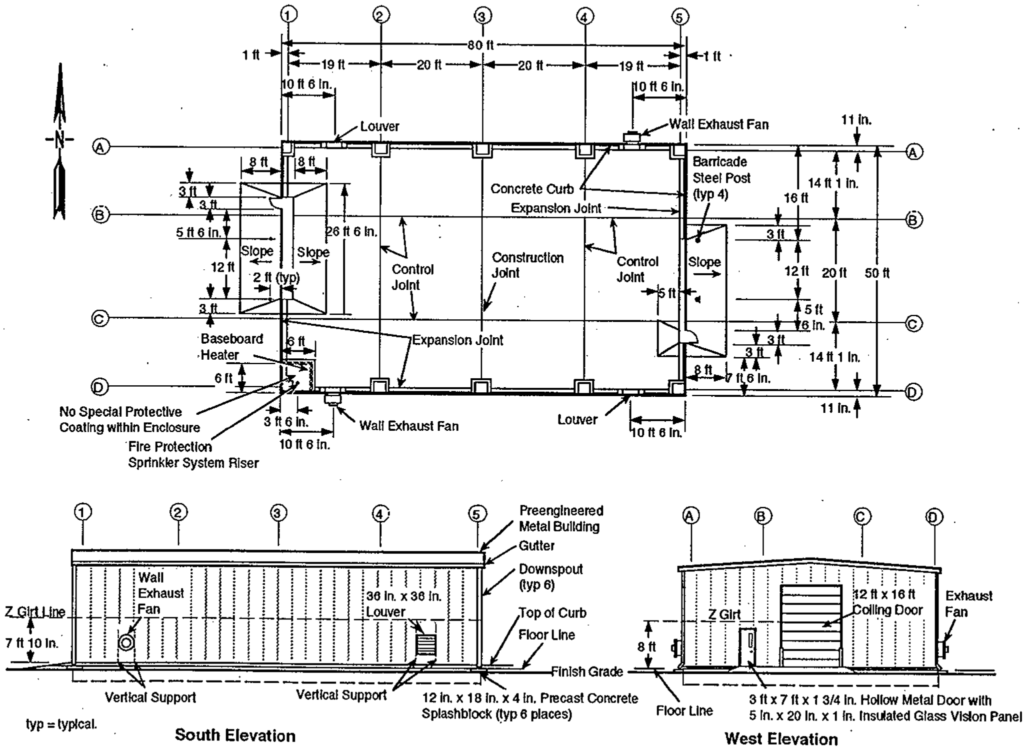


typ = typical.

Note: To convert feet to meter, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98040178.6R1

Typical Waste Storage Buildings (2402-W and 2402-WB through 2402-WL)
Plan and Elevations

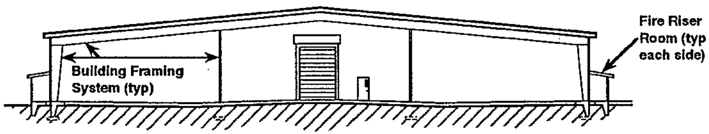


Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

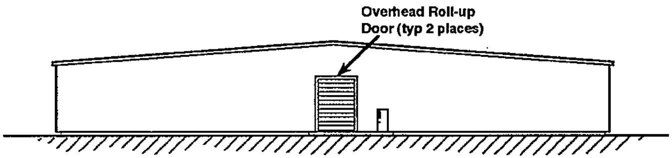
H98040178.5

Typical Waste Storage Building (2403-WA through WC)

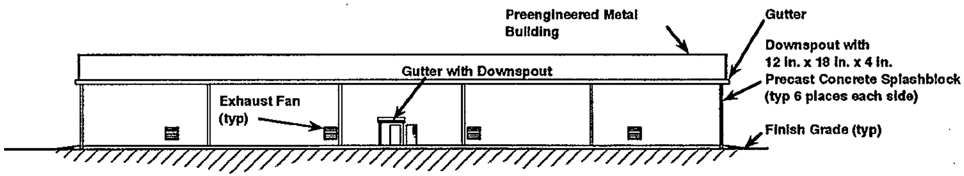
Elevations



Section



East Elevation (West Elevation Similar)



North Elevation (South Elevation Similar)

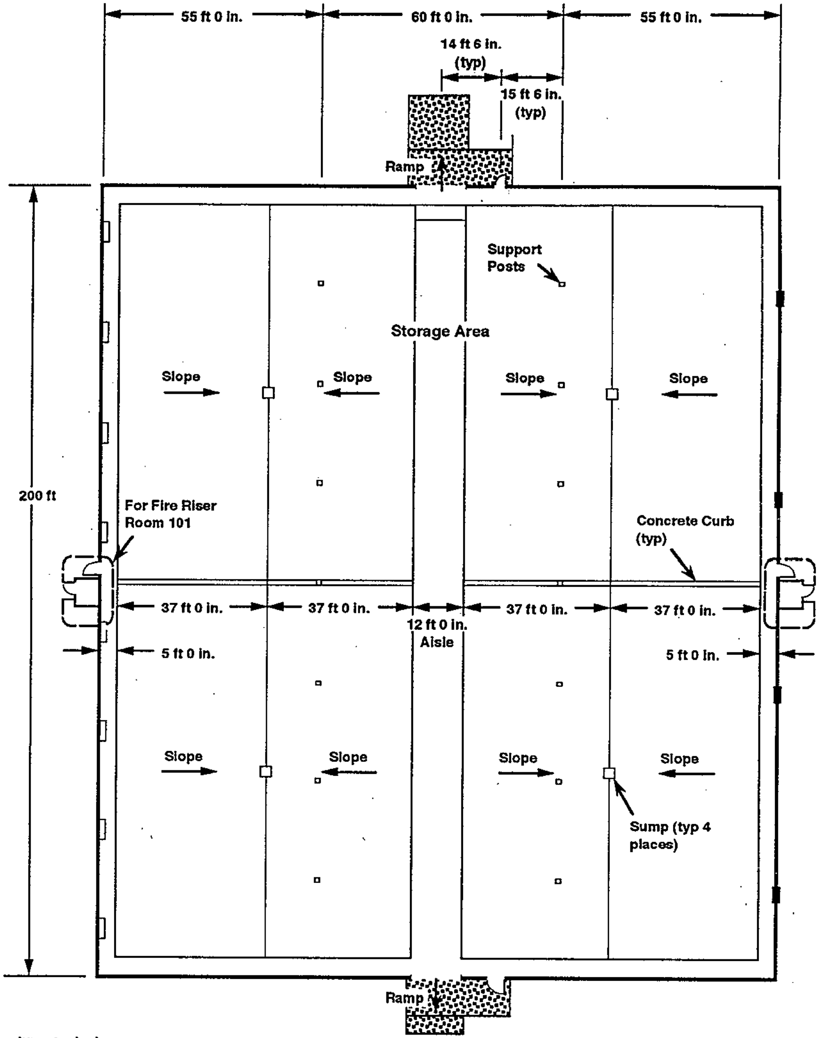
typ = typical.

Not to scale.

Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98040178.4R2

Typical Waste Storage Building (2403-WA through WC)
Plan

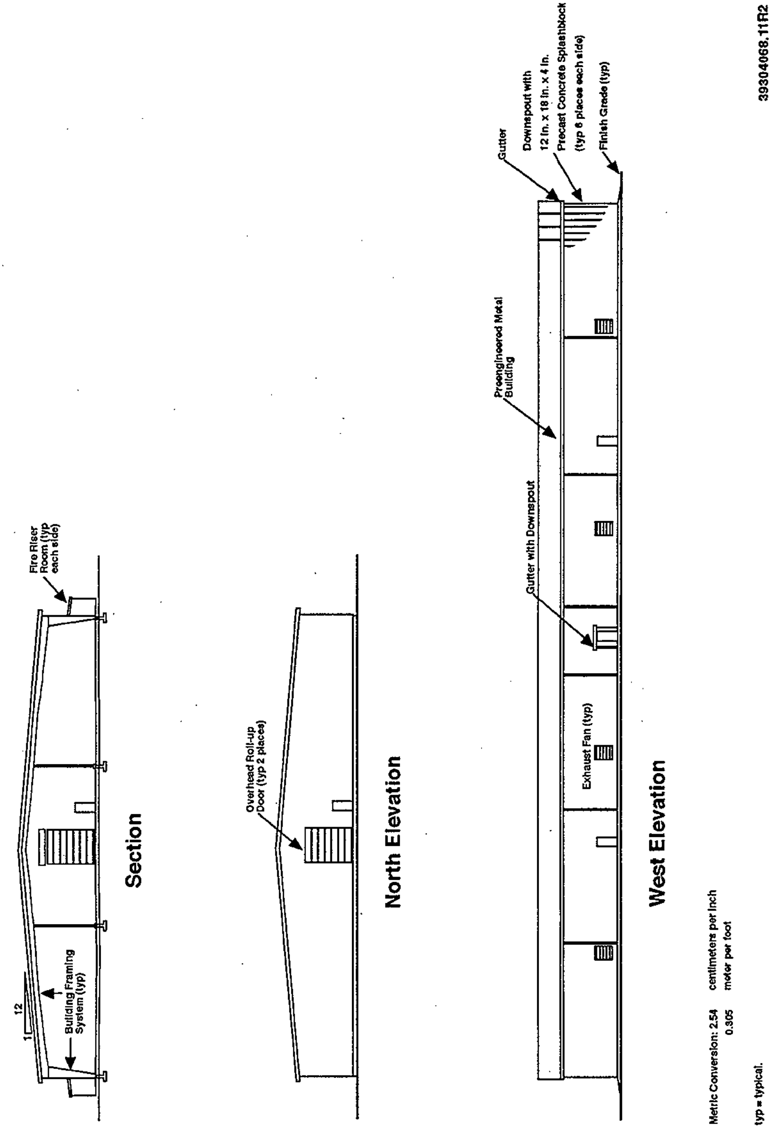


typ = typical.

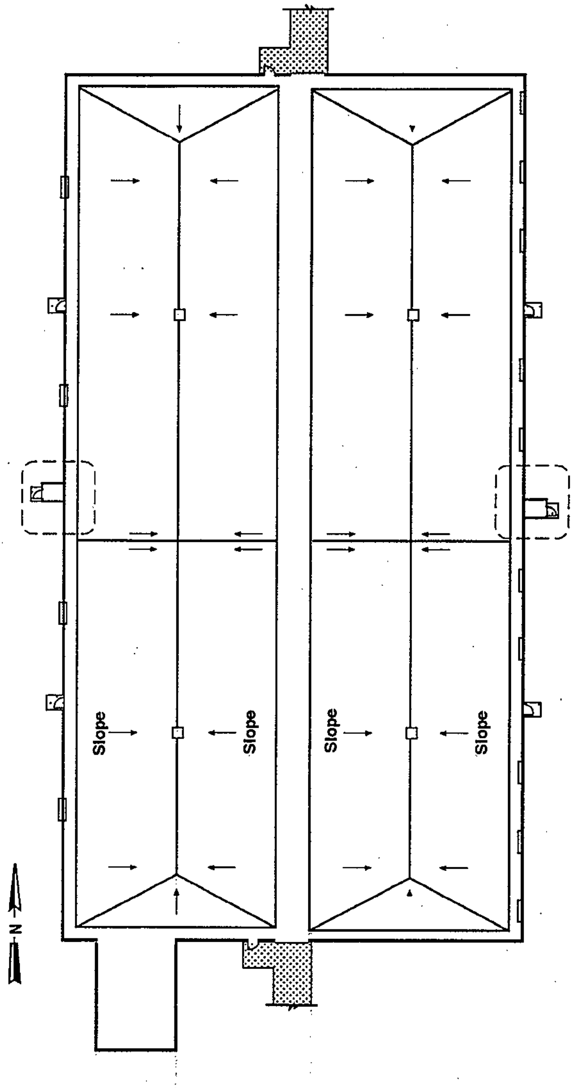
Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98040178.3

Waste Storage Building (2403-WD)



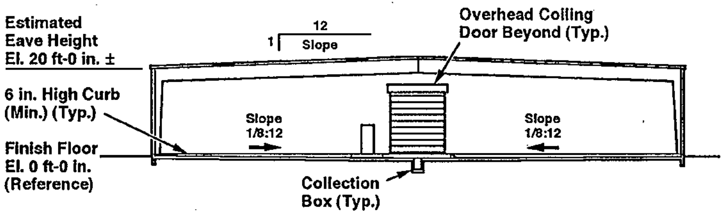
Waste Storage Building (2403-WD)



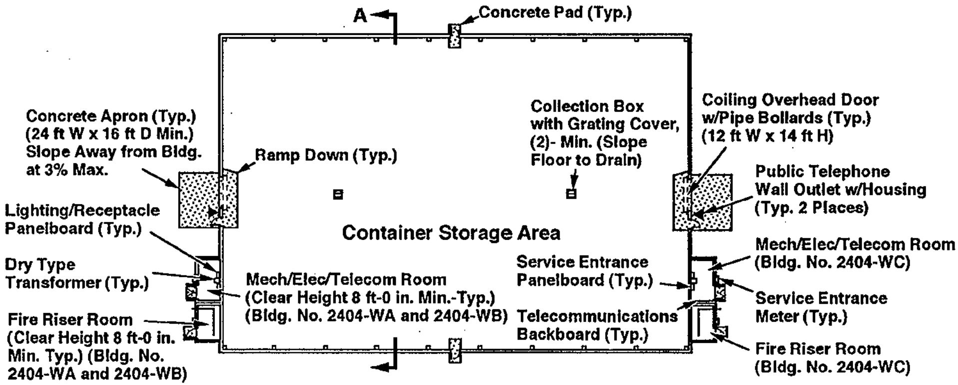
Not to scale.

H98040178.2

Typical Waste Storage Building (2404-WA through WC)



A Section

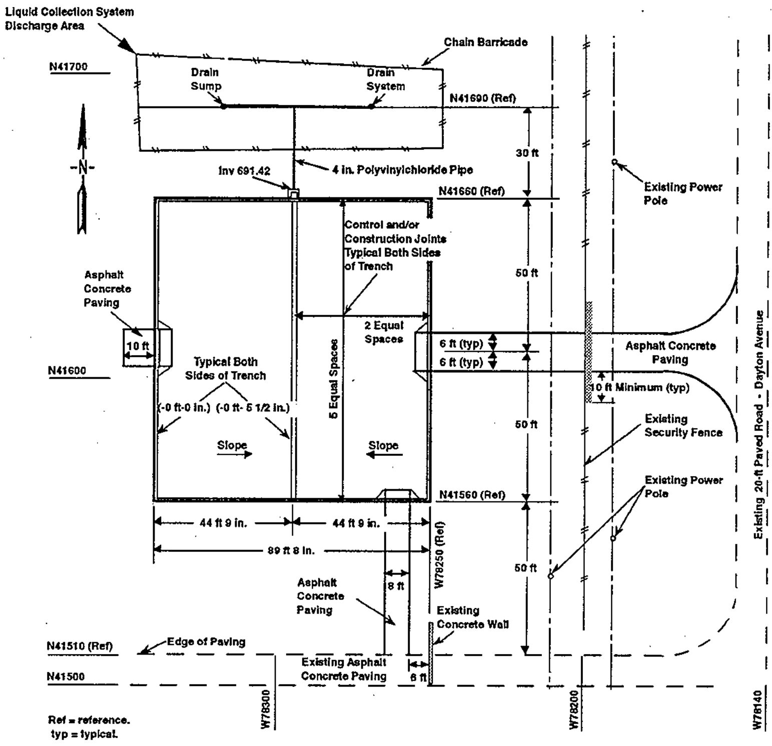


Floor Plan

Min = minimum.
Typ = typical.
Not to scale.
Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, mulitply by 2.54.

H96080291.1R2

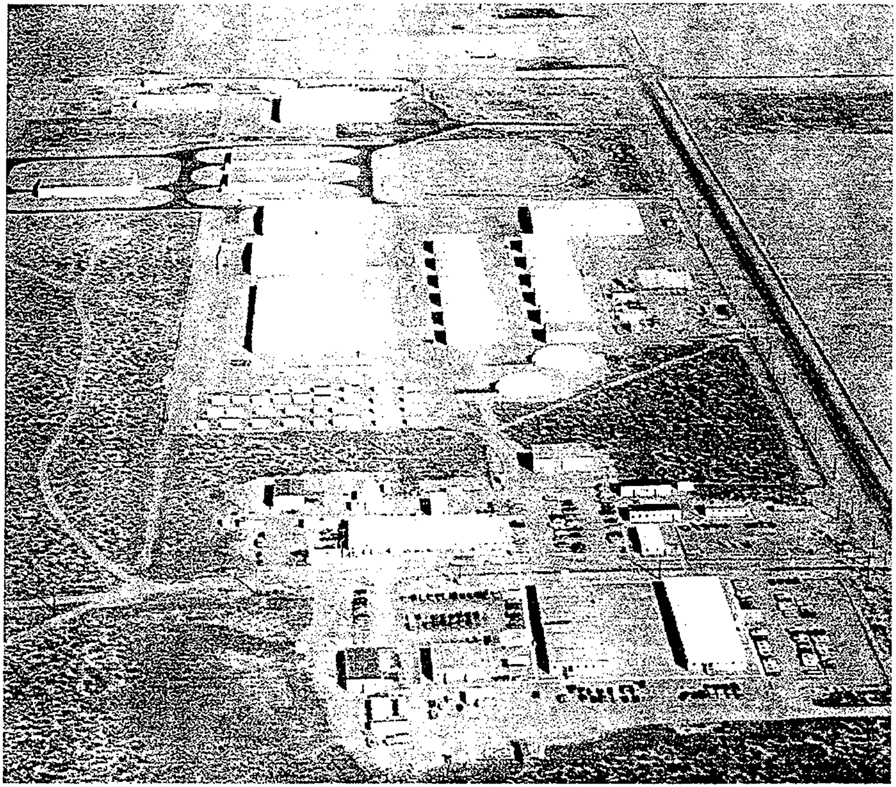
Waste Storage Pad
Civil Plan



Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98010038.6 R2

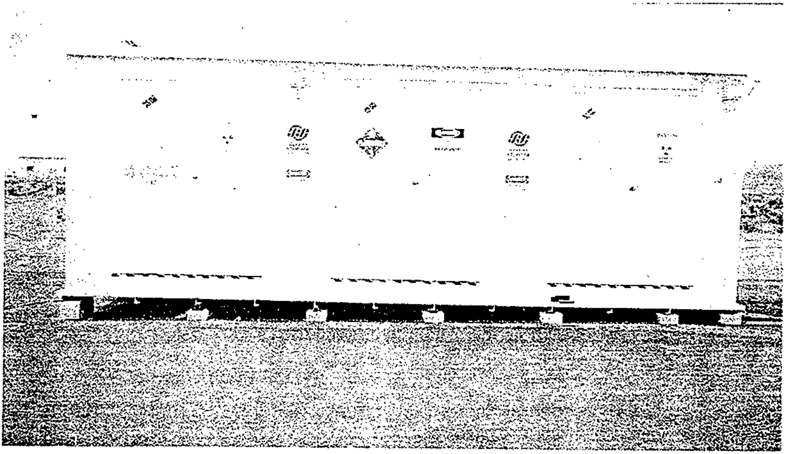
CENTRAL WASTE COMPLEX
AERIAL VIEW



46°33'17"
119°38'24"

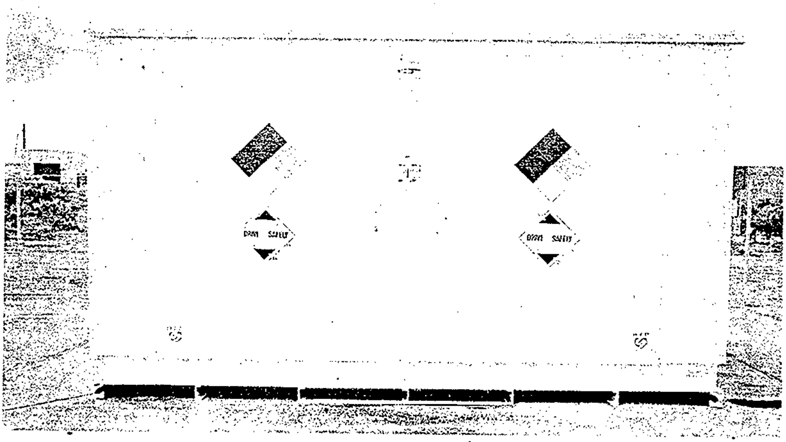
98030102-41CN
(PHOTO TAKEN 1998)

CENTRAL WASTE COMPLEX FLAMMABLE AND ALKALI METAL WASTE STORAGE MODULES



TYPICAL (LARGE)
46°33'17"
119°38'24"

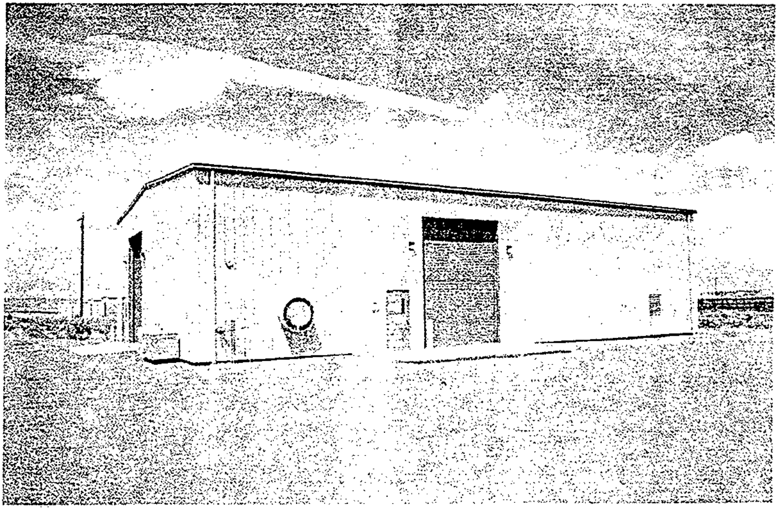
93040010-9CN
(PHOTO TAKEN 1993)



TYPICAL (SMALL)
46°33'17"
119°38'24"

93040010-11CN
(PHOTO TAKEN 1993)

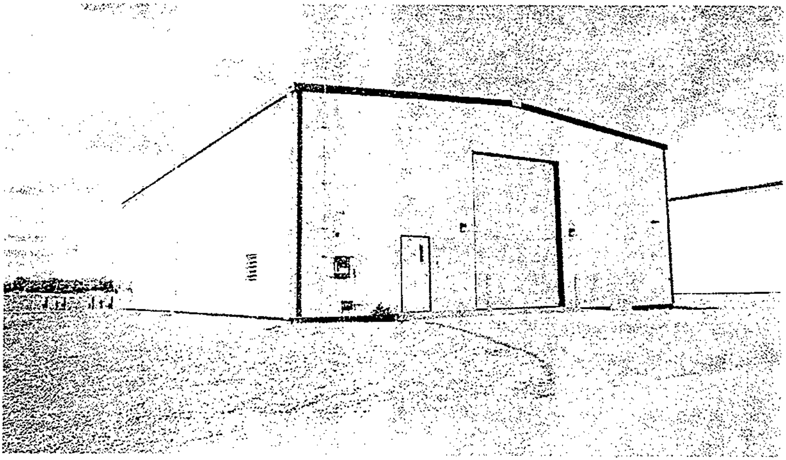
CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



TYPICAL (2401-W)
46°33'17"
119°38'24"

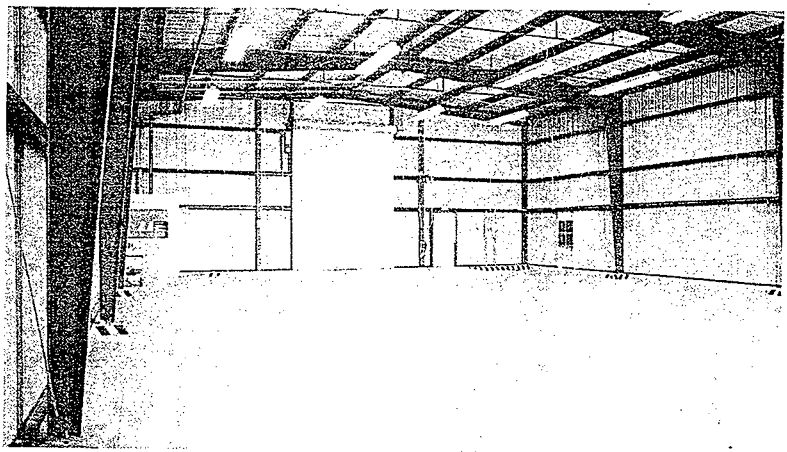
90061110-44CN
(PHOTO TAKEN 1990)

CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



TYPICAL (2402-W, 2402-WB THROUGH 2402-WL)
46°33'17"
119°38'24"

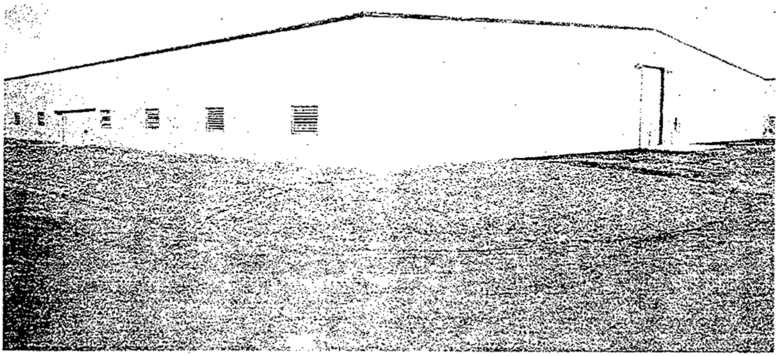
90061110-26CN
(PHOTO TAKEN 1990)



TYPICAL (INTERIOR)
46°33'17"
119°38'24"

90061110-10CN
(PHOTO TAKEN 1990)

CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



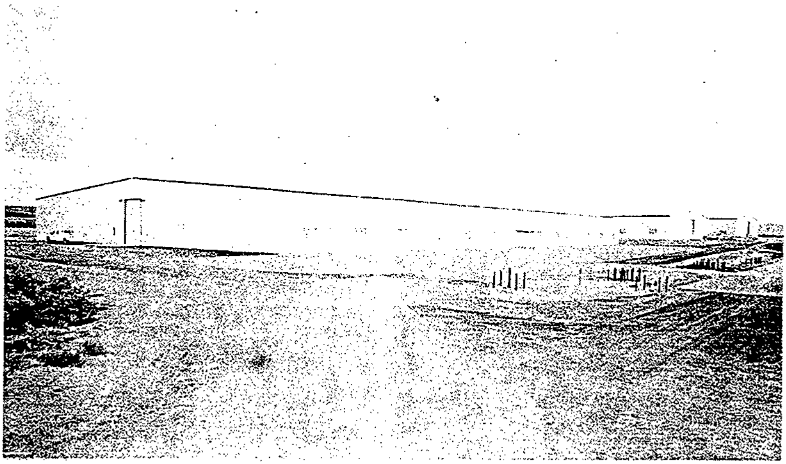
TYPICAL (2403-WA, WB, AND WC)
46°33'17"
119°38'24"

93040010-22CN
(PHOTO TAKEN 1993)

TYPICAL (INTERIOR)
46°33'17"
119°38'24"

93040010-25CN
(PHOTO TAKEN 1993)

CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



TYPICAL (2403-WD)
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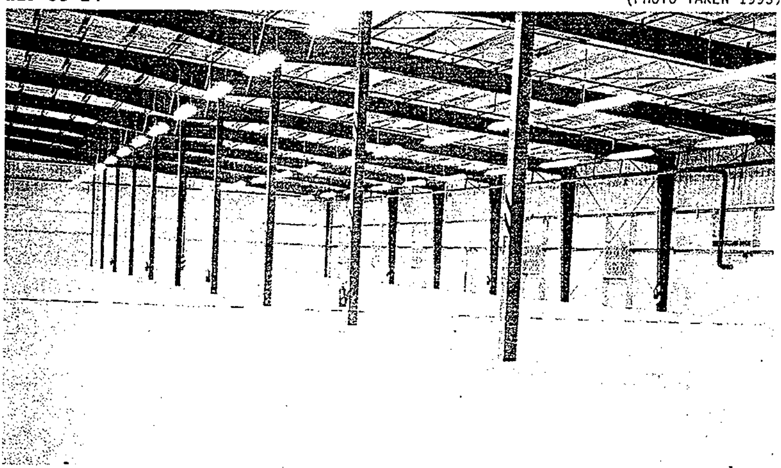
119°38'24"

93040010-13CN
(PHOTO TAKEN 1993)

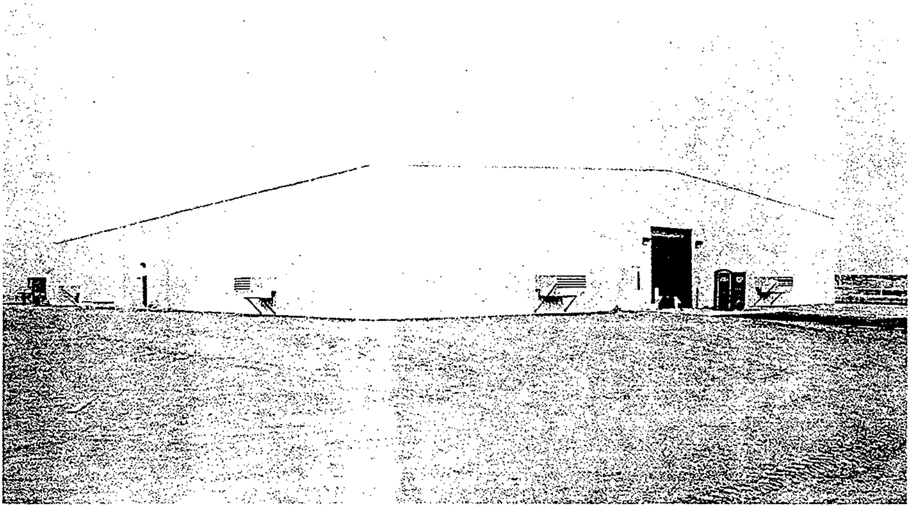


TYPICAL (INTERIOR)
46°33'17"
119°38'24"

93040010-16CN
(PHOTO TAKEN 1993)

Chapter 20

CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



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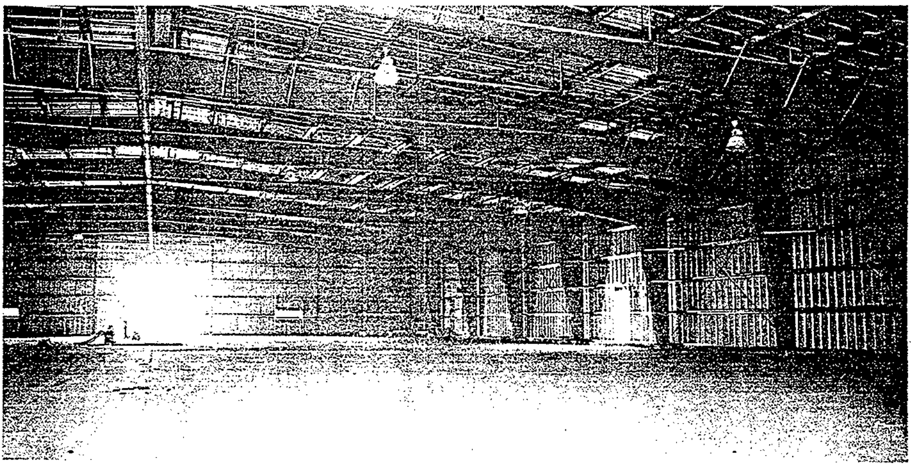
119°38'24"

96080579-29CN
(PHOTO TAKEN 1996)



TYPICAL (INTERIOR)
46°33'17"
119°38'24"

96080579-32CN
(PHOTO TAKEN 1996)

CONTENTS

APPENDIX

FIGURE

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B and E]

This chapter briefly describes the CWC location and provides an overview of CWC operations, including the following:

- General description
- Topography
- Traffic information.

The CWC, located in the 200 West Area (Chapter 1.0), provides storage and treatment for dangerous, mixed, and/or radioactive waste generated on or off the Hanford Facility. Treatment includes absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation of solid waste matrices. A more detailed discussion of the waste types and known characteristics of the waste and the identification of the methods of storage and treatment are provided in Chapters 3.0 and 4.0, respectively. Although the storage and treatment of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge.

The CWC currently consists of the following:

- Flammable and Alkali Metal Waste Storage Modules
- Waste Storage Buildings
- Waste Storage Pad
- Waste Receiving and Staging Area.

These buildings, storage modules, and the storage pad (Chapter 1.0) provide space for waste containers. Storage structures with physical features that provide for segregated storage areas are operated to maintain appropriate separation between arrays of incompatible waste (incompatibility is defined in WAC 173-303-395).

2.1 CENTRAL WASTE COMPLEX DESCRIPTION [B-1 and B-1a]

Descriptions of CWC structures are provided in the following sections.

These structures, sometimes referred to as radioactive and/or mixed waste structures, were designed to manage various waste categories concurrently, and to comply with storage requirements. This allows for compatible combinations of waste to be stored.

2.1.1 Flammable and Alkali Metal Waste Storage Modules

The Flammable and Alkali Metal Waste Storage Modules are pre-engineered structures (Chapter 1.0). The size and weight of the storage modules vary among manufacturers. As a result, there is no set 'standard' module. The floor support system is designed for loads up to 0.12 kilogram per square centimeter.

The front, back, and side walls of all the Flammable and Alkali Metal Waste Storage Modules are constructed of 10-gauge steel and are coated inside with chemical-resistant epoxy paint or have a corrosion-resistant covering. All roofs are constructed of 12-gauge steel. Three of the Flammable Waste Storage Modules have fire-retardant plywood floors and ceilings within the metal skin. The remaining Flammable and Alkali Metal Waste Storage Modules are constructed of metal. All modules have a vented catch sump under the storage floor. This provides spill containment, as well as precluding spills from affecting other containers by keeping the storage deck clean. Each sump has a capacity of 1,500 to 7,600 liters depending on the manufacturer. For the two Low-Flash-Point Waste Storage Modules handling transuranic flammable waste, draft ventilation and electrical service are provided. The other Low-Flash-Point and Alkali Metal Waste Storage Modules similarly will be supplied if necessary. Water supply presently is not provided but could be made available if necessary. Under no circumstances would water be provided to the Alkali Metal Waste Storage Modules.

The Flammable and Alkali Metal Waste Storage Modules are designed to meet all the storage requirements for ignitable, reactive, and corrosive dangerous, mixed, radioactive, and/or *Toxic Substances Control Act* (TSCA) *of 1976* waste of this type. Most of the Flammable and Alkali Metal Waste Storage Modules currently store low-level radioactively contaminated flammable and alkali metal waste. Only compatible waste occupies any one storage module or dedicated secondary containment system at any one time. Two of the Flammable Waste Storage Modules are modified for transuranic flammable waste. The remaining Flammable and Alkali Metal Waste Storage Modules, and any future Flammable and Alkali Metal Waste Storage Modules, also could be modified for a specific use depending on storage needs.

2.1.2 2401-W Waste Storage Building

The 2401-W Waste Storage Building is a pre-engineered steel structure for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), 15.2 meters wide by 24.4 meters long by 6.1 meters high (to the eave), with a clear span in the 15.2-meter direction. The 26-gauge metal structure has two 3.6-meter by 4.9-meter-high rollup truck doors and two personnel doors. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade. The floor accommodates a 908-kilogram forklift and an approximate 1,000 container equivalent load, not to exceed the floor loading limit of 0.22 kilogram per square centimeter. Ramps are across the curb for loading and unloading operations.

Utilities and services for the 2401-W Waste Storage Building include sanitary water, which is required to serve the fire suppression system (Appendix 2A). A 100-ampere (240-volt) service panel is provided for fire suppression, heaters, lighting, and the electronic fire alarm system.

The 2401-W Waste Storage Building is maintained at atmospheric pressure; heating and cooling are not required for operations. The 2401-W Waste Storage Building is uninsulated with the exception of the heated sprinkler risers that are in an enclosure within the building. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with the Uniform Building Code occupancy requirements (ICBO 1996).

2.1.3 2402-W Waste Storage Buildings

The 2402-W Waste Storage Buildings are pre-engineered steel structures for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), 15.2 meters wide by 24.4 meters long by 6.1 meters high (to the eave), with a clear span in the 15.2-meter direction. The 26-gauge metal structures have two 3.6-meter by 4.9-meter-high rollup truck doors and two personnel doors. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade. The floor accommodates a 908-kilogram forklift and an approximate 1,000 container equivalent load, depending on waste management criteria not to exceed the floor loading limit of 0.34 kilogram per square centimeter for the 2402-W Waste Storage Building and 0.98 kilogram per square centimeter for the 2402-WB through WL Waste Storage Buildings. Ramps are across the curb for loading and unloading operations.

Electrical power is supplied to the 2402-W Waste Storage Buildings by underground cables. Power to the 2402-W Waste Storage Buildings are supplied as single phase, 120/240 volts to 100-ampere service panels. Power is supplied to wall exhausters, and low-voltage circuits (120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2402-W Waste Storage Buildings. The sanitary water is routed to the 2402-W Waste Storage Buildings from a looped supply system (Appendix 2A).

The 2402-W Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. The 2402-W Waste Storage Buildings are uninsulated with the exception of the heated sprinkler risers that are in enclosures within the buildings. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements.

2.1.4 2403-WA through WC Waste Storage Buildings

The 2403-WA through WC Waste Storage Buildings, for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), are 51.8 meters wide, 61 meters long, and 6.1 meters high (to the eave), each with a total of 3,159 square meters. The 2403-WA through WC Waste Storage Buildings each accommodate approximately 11,600 208-liter containers. Spill pallets are available for storage of containerized TSCA waste.

The 2403-WA through WC Waste Storage Buildings are steel-supported, sheet-metal-covered structures with an eave height of 6.1 meters and a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is modular beam and column with a rigid frame. Each rigid frame (7.6 meters on center) is supported by two interior columns, spaced at a distance of one third of the overall width of the storage building (17.6 meters on center). The roof and wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 5.5 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pier footings designed to receive the primary building loads. The perimeter has a reinforced concrete foundation carried to a depth of 97 centimeters below grade. The floors accommodate a 908-kilogram forklift and an approximate 11,600 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram per square centimeter.

Floor areas are divided into quadrants by approximately 12.7-centimeter-high concrete curbs and are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste (Chapter 4.0, Appendix 4C). An aisle is provided through the centers of the 2403-WA through WC Waste Storage Buildings to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift travel, and ramps are provided over curbs. Access and maneuverability areas around the 2403-WA through WC Waste Storage Buildings are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2403-WA through WC Waste Storage Buildings to preclude water collection. The interior of the buildings, with the exception of the floor and the sprinkler riser enclosure, remains unfinished. All exposed steel is primed. Wall and roof panels are coated on the interior surface with the manufacturers' standard finish.

Power and telephone lines are extended from the aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains pad-mounted transformers and service equipment for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from the centrally located distribution point through underground conduits to the 2403-WA through WC Waste Storage Buildings.

Electrical power is supplied by an aerial 13.3-kilovolt power line located along the west side of Dayton Avenue. Power is supplied as 3-phase, 120/208 volts and the buildings have 125-ampere service. Power (3-phase, 208-volt) is supplied to wall exhausters, while low-voltage circuits (single-phase, 120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2403-WA through WC Waste Storage Buildings.. The sanitary water is routed from a looped supply system (Appendix 2A).

The 2403-WA through WC Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. The 2403-WA through WC Waste Storage Buildings are uninsulated with the exception of the heated sprinkler risers that are in enclosures attached to the buildings. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements .

2.1.5 2403-WD Waste Storage Building

The 2403-WD Waste Storage Building for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), is a large storage building that is 51.8 meters wide, 99 meters long, and 6.1 meters high (to the eave), for a total of 5,120 square meters. This storage building accommodates approximately 17,500 208-liter containers. Spill pallets are available for storage of containerized TSCA waste.

The 2403-WD Storage Building is a steel-supported, sheet-metal-covered structure with a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is modular beam and column with a rigid frame. Each rigid frame (7.6 meters on center) is supported by two interior columns, spaced at a distance of one third of the overall width of the storage building (17.6 meters on center). The roof and wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 5.5 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pier footings designed to receive the primary building loads. The perimeter has a reinforced concrete foundation carried to a depth of 97 centimeters below grade. The floor accommodates a 908-kilogram forklift and an approximate 17,500 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram per square centimeter.

Floor areas are divided into quadrants by approximately 12.7-centimeter-high concrete curbs and are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste. An aisle is provided through the center of the 2403-WD Storage Building to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift travel. Ramps are provided over curbs. Access and maneuverability areas around the 2403-WD Storage Building are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2403-WD Waste Storage Building to preclude water collection. The interior of the 2403-WD Waste Storage Building, with the exception of the floor and the sprinkler riser enclosure, remains unfinished. All exposed steel is primed. Wall and roof panels are coated on the interior surface with the manufacturers' standard finish.

Power and telephone lines are extended from the aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains a pad-mounted transformer and service equipment for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from the centrally located distribution point through underground conduits to the 2403-WD Waste Storage Building.

Electrical power is supplied to the 2403-WD Waste Storage Building by an aerial 13.3-kilovolt power line located along the west side of Dayton Avenue. Power is supplied as 3-phase, 120/208 volts and the building has 125-ampere service. Power (3-phase, 208-volt) is supplied to wall exhausters, while low-voltage circuits (single-phase, 120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2403-WD Waste Storage Building. The sanitary water is routed from a looped supply system (Appendix 2A).

The 2403-WD Waste Storage Building is maintained at atmospheric pressure; heating and cooling are not required for operations. The 2403-WD Waste Storage Building is uninsulated with the exception of the heated sprinkler risers that are in an enclosure attached to the building. The purpose of the enclosure is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements.

2.1.6 2404-W Waste Storage Buildings

The 2404-W Waste Storage Buildings, for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0) are 37 meters wide, 55 meters long, and 6.1 meters high (to the eave), each with a total of 2,035 square meters of floor area. The 2404-W Waste Storage Buildings each accommodate approximately 4,600 208-liter containers of waste.

The 2404-W Waste Storage Buildings are steel-supported, sheet-metal-covered structure with a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is a free span building with metal beams and columns with a rigid frame. The beams are spaced at 6.1 meter centers on the side of the building and 7.3 meter centers on the ends of the building. The roof is 24 gauge and the wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 4.3 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pier footings designed to receive the primary building loads. The perimeter has reinforced concrete footings that are 1.86 square meters and a concrete floor slab 17.8 centimeters thick. The floors accommodate a 908-kilogram forklift and an approximate 4,600 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram per square centimeter. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade.

The interior floors are sloped with raised perimeter curbing to contain and direct spilled liquids to collections sumps. The floors are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste. An aisle is provided through the center of the 2404-W Waste Storage Buildings to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift. Ramps are provided over curbs. Access and maneuverability areas around the 2404-W Waste Storage Building are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2404-W Waste Storage Buildings to preclude water collection. All exposed steel is primed.

Power and telephone lines are extended from aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains an underground electrical vault with a transformer (from 13.8 kilovolts to 480 volts) and feeds service equipment in the mechanical equipment and telecommunication room for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from a centrally located distribution point through underground conduits to the 2404-W Waste Storage Building mechanical equipment and telecommunication rooms.

Electrical power is supplied by an aerial 13.8-kilovolt power line located along the west side of Dayton Avenue. Power to the 2404-W Waste Storage Buildings is supplied as 3-phase, 480/277 volts and single phase 240/120 volt power after the transformer. The 2404-W Waste Storage Buildings have 225-(Panel A) and 150-(Panel B) ampere service. Power (3-phase, 480/277-volt) is supplied to the roof exhausters, while low-voltage circuits (single-phase, 240/120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles. One special outlet is provided in each building for 30 ampere/480 volt service to run any potential temporary special equipment.

Only sanitary water is used in the 2404-W Waste Storage Buildings. The sanitary water is routed to the 2404-W Waste Storage Buildings from a looped supply system (Appendix 2A).

The 2404-W Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. Ventilation complies with ICBO requirements of four air changes per hour. The 2404-W Waste Storage Buildings are not insulated. However, two heated and insulated rooms attached but not connected (by doors) to the storage buildings contain the fire riser and all of the electrical and telecommunication boards.

2.1.7 Waste Storage Pad

The Waste Storage Pad, approximately 18-centimeter-thick concrete, is designed to support loading up to 0.56 kilogram per square centimeter. The Waste Storage Pad is curbed with 15.2 centimeters of concrete and provided with an impervious epoxy sealant to prevent contaminants from entering the concrete. Information on the epoxy sealant is located in Chapter 4.0, Appendix 4C. The Waste Storage Pad is provided with an access ramp and a rainwater collection and removal system. Monitoring and/or sampling for contaminated rainwater are performed (Chapter 4.0).

2.1.8 Waste Receiving and Staging Area

The Waste Receiving and Staging Area is an asphalt pad approximately 61 meters long and 46 meters wide (2,787 square meters). The allowable floor loading is 0.56 kilogram per square centimeter. The Waste Receiving and Staging Area is used for container handling and staging of waste destined for the various storage buildings. Components of the Waste Receiving and Staging Area include access for loading and unloading operations.

2.1.9 Other Environmental Permits

Environmental permits that are required to support operation of the CWC are identified in the *Annual Hanford Site Environmental Permitting Status Report* (e.g., DOE/RL-96-63).

2.1.10 Construction Schedule [B-1b]

Any proposed new construction for the CWC will be managed as described in the *Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste* (HF RCRA Permit) (Ecology 1994).

2.2 TOPOGRAPHIC MAP [B-2]

A topographic map (Drawing H-13-000003) is located in Appendix 2A.

2.3 CENTRAL WASTE COMPLEX ROADWAYS [B-4]

General traffic information for the Hanford Facility is presented in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28).

Waste is transported to CWC in vehicles ranging from pickup trucks to tractor trailer rigs, depending on the size of the load.

Trucks going to CWC enter the 200 West Area through Gate 611 or Gate 609 from Route 3, shown on Figure 2-1. The paved roads provide adequate all-weather access to CWC. Parking areas for CWC personnel also are provided. Existing paved roads provide satisfactory all-weather access during operation.

2.4 RELEASE FROM SOLID WASTE MANAGEMENT UNITS [E]

Information concerning releases from SWMUs is discussed in the General Information Portion (DOE/RL-91-28).

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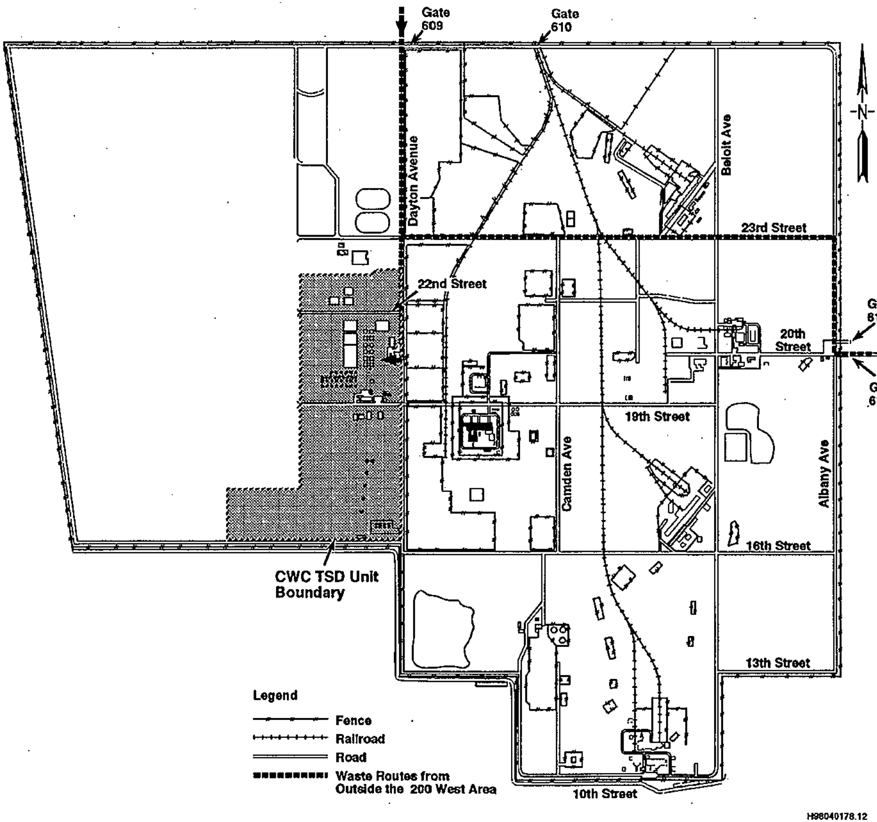

Figure 2-1. Waste Routes in the 200 West Area.

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APPENDIX

TABLE

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3.0 WASTE ANALYSIS [C]

This chapter provides information on the chemical, biological, and physical characteristics of the waste stored and treated at CWC. A waste analysis plan (Appendix 3A) describes the methodology for determining waste types. Although the storage and treatment of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

Table 3-1 lists the waste numbers of material stored at CWC. Waste normally can be characterized as 'U', 'P', 'F', 'D', or 'W' waste numbers (WAC 173-303) by the use of manufacturers' product information, material safety data sheets, laboratory analysis, and such reference as the *Registry of Toxic Effects of Chemical Substances* (NIOSH 1997). Waste also is characterized in accordance with the requirements of 40 CFR 261 and 761. Because of the nature of the waste managed at CWC, no biological characterization is necessary.

Some waste regulated under TSCA also can be received and stored at CWC.

It is the responsibility of the onsite generating units and offsite generators to completely and correctly identify the dangerous constituents of their waste (Table 3-1). The CWC operating organization maintains copies of the following records for each waste stored at CWC, as applicable:

- All records providing a description of the waste
- Documentation identifying the dangerous characteristics of the waste
- The basis for waste designation
- Laboratory reports with chemical and physical analysis of samples
- Manifests or onsite waste tracking forms.

Waste stored and treated at CWC is packaged in a system of multiple barriers selected and specifically engineered to isolate the waste content from humans and the environment. The waste is confined in package systems that can include several plastic, metal, and glass containers and other materials to provide additional barriers to the environment or to make the waste more compatible with other barrier materials. Specific package barrier information is provided in Chapter 4.0.

In general, each package is unique, and containers continually are being accepted for storage. The CWC accepts waste having the waste numbers identified in Table 3-1, excluding explosive, shock-sensitive (Chapter 4.0), and class IV oxidizer waste [in waste volumes greater than 10 pounds (22 kilograms)].

Under current operating conditions, waste stored at CWC is packaged in double containment or otherwise packaged to ensure isolation from the environment. Chapter 4.0, provides details of the container system.

3.2 WASTE ANALYSIS PLAN [C-2]

The CWC waste analysis plan (Appendix 3A) summarizes the waste acceptance processes. Also described in the waste analysis plan are sampling methods; analytical parameters and rationale; quality control and quality assurance methods; requirements for incoming waste; requirements for spilled material; storage requirements for ignitable, reactive, and incompatible waste; and the methods for waste tracking and recordkeeping.

Table 3-1. Dangerous Waste Numbers of Materials Stored at Central Waste Complex.

Number	Reference
U and P numbers	WAC 173-303-9903
F001 through F005	WAC 173-303-9904
F020 through F023	WAC 173-303-9904
F026 through F028	WAC 173-303-9904
F039	WAC 173-303-9904
W001	WAC-173-303-9904
D001	WAC 173-303-090(5)
D002	WAC 173-303-090(6)
D003	WAC 173-303-090(7)
D004 through D043	WAC 173-303-090(8)
WT01 and WT02	WAC 173-303-100 and 104
WP01 and WP02 and WP03	WAC 173-303-100 and 104
WSC2	WAC 173-303-090(6)

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CONTENTS

APPENDICES

TABLE

4.0 PROCESS INFORMATION [D]

This chapter discusses the processes used to store waste at CWC. A discussion of run-off and run-on control systems also is presented. Although the storage of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge.

4.1 CONTAINERS [D-1]

All waste accepted for storage at CWC is packaged in approved containers (U.S. Department of Transportation and/or U.S. Department of Energy), unless alternate packages are dictated by the size, shape, or form of waste (49 CFR 173) (e.g., boxes).

Exterior surfaces of 208-liter metal containers either are painted or galvanized in accordance with specifications. Protective coatings for waste packages other than 208-liter containers are specified on the waste tracking forms for individual waste streams.

4.1.1 Containers with Free Liquids

Containers with free liquids are discussed in the following sections.

4.1.1.1 Description of Containers [D-1a]. Waste stored in CWC is packaged in galvanized or aluminized 208-liter steel containers or other approved containers in a double-packaging system. The inner containment can be either a 4-mil or heavier plastic liner or a 90-mil polyethylene liner.

Before liquids are accepted for storage, the liquids are (1) bound by sorption or (2) sealed in leak-resistant containers (e.g., labpacks or overpacks) and surrounded by sorbent material in a 208-liter container or other approved container to facilitate eventual treatment of the liquid. The labpack/overpack configuration results in a smaller container(s) packaged with an appropriate sorbent to sorb at least twice the maximum amount of liquid potentially present. In both packaging configurations, the sorbent selected is compatible with the waste, and if known, the eventual treatment requirements. Acceptable sorbents are documented in the CWC operating record for each waste stream. Sorbents are selected based on the following criteria: compatibility with the waste, no additional hazards created, and appropriateness for ultimate disposal/treatment strategy (e.g., nonbiodegradable sorbents for waste acceptable for onsite disposal). Waste with the potential to form condensate during storage contains sufficient sorbent in the bottom of the container to sorb any condensate formed.

Gas generation is controlled to prevent pressurization exceeding 1.5 atmospheres and combustible gas concentrations exceeding the lower explosive limit for up to 20 years of storage. To prevent the potential buildup of gases, vents such as Nucfil®*, vent clips, or other approved devices are used.

4.1.1.2 Container Management Practices [D-1b]. Before receipt at CWC, all 208-liter containers are closed by the onsite generating unit or offsite generator by means of a neoprene gasket, steel lid, locking ring,

* NucFil® is a Registered Trademark of the Nuclear Filter Technology, Incorporated.

locking ring bolt, and a lock nut torqued tight or by other available methods to meet applicable U.S. Department of Transportation packaging requirements. On receipt, each container or group of containers is inspected before acceptance by CWC operations personnel for damage, proper closure, marking, and proper accompanying documentation.

Each container can be handled individually or as a group on pallets. If handled individually, either a hand-truck dolly, a fork-lift truck with 'barrel grabber', or a crane with a 'barrel tong', or other approved methods (all specifically designed for handling containers) could be used. The containers are placed on pallets that can be handled by a forklift vehicle. A maximum of four containers can be stored on each pallet, and stacking of pallets allows for a maximum of 12 containers per stack, three containers in height. Heavier containers are rotated to the bottom of the stack to ensure a stable center of gravity for each stack. Aisle space requirements are provided in Chapter 6.0, Section 6.3.2. In the Flammable and Alkali Metal Waste Storage Modules, maximum storage capacity is 58 208-liter container equivalents. However, this estimate could fluctuate depending on storage module size.

The container packaging, module construction, and container handling is designed to maintain containment of the waste, provide retrieval capability of damage-free and contamination-free containers, limit storage intrusion, and limit human exposure to dangerous waste and hazardous materials. Retrieved containers from the Low-Level Burial Grounds can be assayed, x-rayed, and headspace analyzed for volatiles and semivolatile compounds. In addition, records of the waste provide process knowledge concerning the waste, which is used to identify the hazards. Appropriate labels are applied to the containers before acceptance at CWC.

4.1.1.3 Container Labeling [D-1c]. Containers are labeled and marked to indicate the dangerous and radioactive characteristics of the waste. All waste containers received are marked in accordance with the requirements specified under 49 CFR 172. In addition to the 49 CFR 172 marking and labeling requirements, all waste containers must be marked, as appropriate, to adequately identify the major risk(s) associated with the contents of the containers, per WAC 173-303-630(3).

4.1.2 Containment Requirements for Storing Containers [D-1d]

The following sections describe secondary containment systems.

4.1.2.1 Secondary Containment System Design and Operation [D-1d(1)(a) and (b)]. The Waste Storage Pad and each of the storage buildings (except for the 2403-WA through WD Waste Storage Buildings, which have a sloping floor and sump) are designed with 15.2 centimeter curbing that serves as a liquid catch basin (Appendix 4A). In addition, all containers are elevated (e.g., pallets, skids) to protect the containers from contacting accumulated liquids.

Calculations performed to verify containment capacity are detailed in Appendix 4B. The Waste Storage Pad has a collection removal system for spill containment and the collection of liquid (e.g., rain, snowmelt). Calculations for the 25-year/24-hour storm are provided in Appendix 4B. The Flammable and Alkali Metal Waste Storage Modules have self-contained catch basins to catch spills. The Waste Receiving and Staging Area serves only as a receipt and staging area.

The floors of the various storage buildings were constructed from reinforced concrete that was sealed with a polyurethane enamel epoxy resin. When cured, this sealant has properties similar to glass. The polyurethane sealant is chemically resistant and inert with respect to acids, bases, oxidizers, combustibles, and flammables. Information on the sealant properties is included in Appendix 4C. All piping penetrations and construction joints are grouted or caulked and sealed.

If inspections identify floor areas where the sealant has been compromised (e.g., concrete is exposed), this area(s) is noted on the inspection checklist. Repairs are made in a timeframe established by the CWC supervisor, temperature conditions (per coating manufacturer recommendations) permitting. The inspection checklist is signed to indicate acceptance of the repair.

Concrete is essentially an inert material with respect to caustic, oxidizing, combustible, and flammable materials, and the concrete has been sealed to prevent seepage of liquid into the concrete. Therefore, there are no compatibility problems with the base and the waste stored at CWC.

4.1.2.2 Containment System Capacity [D-1d(1)(c)]. Each storage building floor is designed to contain over 10 percent of the total volume of liquid in all containers that can be stored or 100 percent of the largest container, whichever is greater. Table 4-1 lists the total containment and maximum container storage volumes for each storage building and the Waste Storage Pad.

4.1.2.3 Control of Run-On [D-1d(1)(d)]. The only major run-on or run-off foreseen would be an event such as a fire sprinkler activation or pipe break. All CWC buildings are roofed structures (except for the Waste Receiving and Staging Area and the Waste Storage Pad); therefore, run-on is prevented. Containment systems in CWC are capable of holding various amounts of liquid, as the size of the storage buildings varies. Collected or contained liquid can be removed by hand pumps for large quantities and by absorbents for smaller quantities. All waste stored in CWC structures is in sealed containers, which limits the detrimental impact of a run-on or run-off situation.

In the event that contaminated water is released from any CWC structure resulting from flooding of a containment system by fire sprinkler activation or a pipe break (Section 4.1.3), the incident will be treated as a spill.

When waste is stored on the Waste Storage Pad, the trench drain plug is kept closed and locked. The CWC supervisor controls the trench key. If water from a known source (e.g., rainwater, snowmelt) accumulates in the Waste Storage Pad trench when waste is stored, the following is performed.

- Liquid is inspected visually for signs of contamination (i.e., discoloration, etc.).
- If contamination is suspected, an analysis of pH and radioactive contamination is performed.
- The CWC logbook is reviewed to identify any spills.
- Cleanup reports are reviewed to confirm that the Waste Storage Pad is clean.
- The CWC supervisor signs the logbook, indicating that these steps have been completed and that the Waste Storage Pad is clean.
- The CWC supervisor or designee unlocks the drain plug and the water is released to the ground. Releases to the environment will be recorded in the CWC logbook.

- After the trench has been completely drained, the CWC supervisor or designee locks the drain plug.

- The CWC supervisor signs the logbook, indicating that the trench was drained and the drain plug is closed and locked.

Water that has accumulated in the Waste Storage Pad trench that cannot be confirmed to be free of contamination is containerized and stored in an area of CWC that is equipped with secondary containment. The containerized water is handled in accordance with the provisions of the waste analysis plan (Chapter 3.0).

Actions to be taken in response to a spill or discharge are detailed in the building emergency plan (Appendix 7A).

4.1.3 Removal of Liquids from Containment System [D-1d(2)]

In the event of a spill or release that results in the collection of liquid waste material in the containment system, the following is performed.

- Containers affected are inspected for signs of leakage. Leaking containers are repackaged and identified in the CWC operating logbook.

- Inspection reports and CWC operating logbook are reviewed to identify any waste releases in the waste storage areas for which remedial actions have not been completed.

- The equipment used for removal of large quantities of liquid normally is a hand-held pump or vacuum system. Absorbents are used for removal of small amounts of liquid. The waste material is placed in an approved container.

  The containerized waste is handled as follows.

  - If the waste has been altered during stabilization and cleanup actions (absorbed, mixed, diluted, etc.), the containerized waste is placed in storage and managed in accordance with the provisions of the waste analysis plan (Chapter 3.0).

  - The CWC inventory is updated to reflect the changes in waste description, volume, and storage locations.

  - If the waste was not altered during stabilization and cleanup activities, the containerized waste is placed in the appropriate storage area, and the CWC inventory is altered to reflect any changes.

- Documentation is approved indicating that the waste was removed from the containment system and cleanup activities are completed. Completion of this cleanup is documented in the logbook.

Specific actions to be taken in response to a spill or discharge are detailed in the Building Emergency Plan (Appendix 7A).

In the event of a fire sprinkler activation or pipe break within CWC structures that results in collection of water in the containment system, the following is performed.

- Water in the containment system is inspected visually for signs of contamination.
- If contamination is suspected, an analysis of pH and radioactivity is performed.
- Containers in the storage building(s) affected by sprinkler activation or pipe break are inspected for signs of leakage.
- Inspection reports and the CWC operating logbook are reviewed to identify any waste releases in the waste storage structure(s) for which remedial actions have not been completed.
- The CWC supervisor signs the operating logbook indicating that the previous steps have been completed and that the storage structure(s) are clean.

  Water that has accumulated in the containment system that is suspected of being contaminated is handled as follows.

  - The water is removed from the containment system and managed in accordance with the waste analysis plan (Appendix 3A).
  - Water that has been accumulated in the containment system that can be verified to be free of contamination is released to the ground.
  - The CWC supervisor signs the operating logbook indicating that the water was removed from the containment system.

4.2 CONTAINERS WITHOUT FREE LIQUIDS [D-1e]

Containers without free liquids that do not exhibit ignitability or reactivity are discussed in the following sections.

4.2.1 Test For Free Liquids

A test for free liquids is not performed unless specific instructions are received because testing would increase the radiation exposure of personnel.

4.2.2 Description of Containers

The description of containers is the same as described in Section 4.1.1.1.

4.2.3 Container Management Practices

Container management practices are the same as described in Section 4.1.2.

4.2.4 Container Storage Area Drainage

The description of the storage area drainage is the same as described in Section 4.1.2. Areas inside the storage buildings and outside adjacent areas are sloped so that water flows away, presenting no danger of flooding.

4.3 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE IN CONTAINERS [D-1f]

Ignitable, reactive, and incompatible waste stored in containers is packaged and managed in the manner described in Section 4.1.1 for containers with free liquids.

4.3.1 Management of Reactive Waste in Containers [D-1f(1)]

The CWC stores waste exhibiting the characteristics of reactivity as specified in WAC 173-303-090 (Chapter 3.0). Proper precautions are taken to prevent any offnormal situations from occurring (Chapter 6.0, Section 6.5).

4.3.2 Management of Ignitable and Reactive Waste in Containers [D-1f(2)]

The following precaution is used for storing ignitable and reactive waste. All containers of waste with a flash-point of less than 37.8 °C or reactive waste are placed in the Flammable and Alkali Metal Waste Storage Modules. These storage modules are physically separated by a distance of at least 1.5 meters between adjacent modules (NFPA 1997).

4.3.3 Design of Areas to Manage Incompatible Wastes [D-1f(3)]

Packages containing incompatible waste are not permitted in the same container. Incompatible waste is stored in separate containment systems or separate storage modules. Incompatible mixtures include those that have the potential to generate a dangerous evolution of heat or gas or produce corrosive materials (49 CFR 173.21). Also, waste is not placed in an unwashed container that previously held an incompatible waste or material.

The onsite generating unit or offsite generator and the CWC operating organization are responsible for determining the regulatory status of each waste and for determining the incompatible compounds of the waste (Chapter 3.0). Status information determined by CWC operations is passed to the onsite generating unit or offsite generator. Onsite generating unit or offsite generator transportation personnel inspect the container for proper packaging, labeling, and marking, and review the completed waste manifest or onsite waste tracking form before transport to CWC. Containers are inspected at CWC to ensure that the waste is properly packaged, marked, labeled, and that correct information is recorded on the manifest or waste tracking form (Chapter 3.0).

Each storage area contains one compatibility group that is segregated either by walls or curbs.

4.4 AIR EMISSIONS CONTROL [D-8]

This section addresses the CWC requirements of Air Emission Standards under 40 CFR 264, Subpart CC.

4.4.1 Applicability of Subpart CC Standards [D-8c]

The air emission standards of 40 CFR 264, Subpart CC, apply to tank, surface impoundment, and container storage units that manage wastes with average volatile organic concentrations equal to or exceeding 500 parts per million by weight, based on the dangerous waste composition at the point of origination (61 FR 59972). However, containers that are used solely for management of mixed waste are exempt. Mixed waste is managed at CWC and dangerous waste also could be managed at this TSD unit.

TSD owner/operators are not required to determine the concentration of volatile organic compounds in a dangerous waste if the wastes are placed in waste management units that employ air emission controls that are in compliance with the Subpart CC standards. Therefore, the approach to Subpart CC compliance at CWC is to demonstrate that CWC meets the Subpart CC control standards (40 CFR 264.1084 - 264.1086).

4.4.2 Demonstrating Compliance with Subpart CC Standards

Container Level 1 and Level 2 standards are met at CWC by managing all dangerous waste in U.S. Department of Transportation containers [40 CFR 264.1086(f)]. Level 1 containers are those that store more than 0.1 cubic meter and less than or equal to 0.46 cubic meter. Level 2 containers are used to store more than 0.46 cubic meter of waste that are in 'light material service'. Light material service is defined where a waste in the container has one or more organic constituents with a vapor pressure greater than 0.3 kilopascal at 20°C, and the total concentration of such constituents is greater than or equal to 20 percent by weight.

The monitoring requirements for Level 1 and Level 2 containers include a visual inspection when a container of dangerous waste is received at CWC and when waste is initially placed in a container at CWC, and at least once every 12 months when stored onsite for 1 year or more.

If DOT compliant containers are not used at CWC, alternate container management practices are used that comply with the Level 1 or Level 2 standards as applicable. Specifically, these standards allow for a "container equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover installed on the container...or may be an integral part of the container structural design...." [40 CFR 264.1086(c)(1)(ii)]. An organic-vapor-suppressing barrier, such as foam, also may be used [40 CFR 264.1086(c)(1)(iii)]. Section 4.2 provides detail on container management practices at CWC.

Container Level 3 standards apply when a container is used for the "treatment of a hazardous waste by a waste stabilization process" [40 CFR 264.1086(2)]. Because a waste stabilization process is not applied to dangerous waste in containers at CWC, these standards do not apply.

Table 4-1. Storage Volume for Each Storage Building. (sheet 1 of 3)

Building	Maximum number of 208-liter containers	Maximum total volume (liters)	Maximum containment capacity (liters)
2401-W	1,072	222,926*	30,200
2402-W	1,072	222,976*	50,200
2402-WB	1,072	222,976*	50,200
2402-WC	1,072	222,976*	50,200
2402-WD	1,072	222,976*	50,200
2402-WE	1,072	222,976*	50,200
2402-WF	1,072	222,976*	50,200
2402-WG	1,072	222,976*	50,200
2402-WH	1,072	222,976*	50,200
2402-WI	1,072	222,976*	50,200
2402-WJ	1,072	222,976*	50,200
2402-WK	1,072	222,976*	50,200
2402-WL	1,072	222,976*	50,200
2403-WA	11,600	2,412,800*	188,000
2403-WB	11,600	2,412,800*	188,000
2403-WC	11,600	2,412,800*	188,000
2403-WD	17,500	3,640,000*	312,000
2404-WA	4,600	956,800*	436,000
2404-WB	4,600	956,800*	436,000
2404-WC	4,600	956,800*	436,000
Flammable Waste Storage Module 1	27	5,616**	2,000
Flammable Waste Storage Module 2	27	5,616**	2,000
Flammable Waste Storage Module 3	58	12,064**	7,600
Flammable Waste Storage Module 4	28	5,824**	3,300

Table 4-1. Storage Volume for Each Storage Building. (sheet 2 of 3)

Building	Maximum number of 208-liter containers	Maximum total volume (liters)	Maximum containment capacity (liters)
Flammable Waste Storage Module 5	32	6,656**	3,500
Flammable Waste Storage Module 6	32	6,656**	3,500
Flammable Waste Storage Module 7	32	6,656**	3,500
Flammable Waste Storage Module 8	28	5,824**	3,300
Flammable Waste Storage Module 9	32	6,656**	3,500
Flammable Waste Storage Module 10	32	6,656**	3,500
Flammable Waste Storage Module 11	32	6,656**	3,500
Flammable Waste Storage Module 12	32	6,656**	3,500
Flammable Waste Storage Module 13	28	5,824**	3,300
Flammable Waste Storage Module 14	58	12,064**	7,600
Flammable Waste Storage Module 15	32	6,656**	3,500
Flammable Waste Storage Module 16	40	8,320**	4,200
Flammable Waste Storage Module 17	40	8,320**	4,200
Flammable Waste Storage Module 18	40	8,320**	4,200
Flammable Waste Storage Module 19	30	6,240**	3,300
Flammable Waste Storage Module 20	30	6,240**	3,300

Table 4-1. Storage Volume for Each Storage Building. (sheet 3 of 3)

Building	Maximum number of 208-liter containers	Maximum total volume (liters)	Maximum containment capacity (liters)
Flammable Waste Storage Module 21	32	6,656**	3,100
Flammable Waste Storage Module 22	32	6,656**	3,100
Flammable Waste Storage Module 23	32	6,656**	3,100
Flammable Waste Storage Module 24	32	6,656**	3,100
Flammable Waste Storage Module 25	32	6,656**	3,100
Flammable Waste Storage Module 26	48	9,984**	1,500
Flammable Waste Storage Module 27	48	9,984**	1,500
Waste Storage Pad	1,700	353,600**	183,000
Alkali Metal Waste Storage Module 1	32	6,656**	2,700
Alkali Metal Waste Storage Module 2	32	6,656**	3,400
Alkali Metal Waste Storage Module 3	32	6,656**	2,700
Alkali Metal Waste Storage Module 4	32	6,656**	3,400

* Maximum total volume can be increased by 100 percent depending on types, sizes, and quantities of boxes or other types of containers.

** Maximum total volume can be increased by 54 percent if 113-liter containers are stacked on top of each 208-liter container.

Chapter 5

CONTENTS

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5.0 GROUNDWATER MONITORING FOR LAND-BASED UNITS [D-10]

The CWC is not operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill as defined in WAC 173-303-645(1)(a). Therefore, groundwater monitoring is not required.

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Chapter [illegible]

CONTENTS

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter discusses security; inspection schedules; preparedness and prevention requirements; preventive procedures, structures, equipment; and prevention of reaction of ignitable, reactive, and incompatible waste stored at CWC.

The CWC is designed and operated to minimize exposure of the general public and operating personnel to waste. Shielding, contamination control, control of toxic or dangerous material, safety and security procedures, and structures are used to keep exposure as low as reasonably achievable (ALARA). In addition, CWC is designed to withstand accidents without undue risk to the health and safety of the general public and operating personnel.

6.1 SECURITY [F-1]

The following sections describe the security measures, equipment, and warning signs used to control entry to CWC. A discussion of Hanford Facility security is provided in the General Information Portion (DOE/RL-91-28).

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and to control access to CWC.

6.1.1.1 24-Hour Surveillance System. The entire Hanford Facility is a controlled-access area. Refer to General Information Portion (DOE/RL-91-28).

6.1.1.2 Barrier and Means to Control Entry. The CWC is protected by fences and building structures to enhance physical security. Security lighting is provided. Entrances to CWC from within the 200 West Area are open during normal day-shift operations. However, visitors are required to check in at the operations office before entering areas of CWC where they might be exposed to waste. Gates are secured during off-shift hours with access provided on an as-needed basis.

6.1.1.3 Warning Signs. The individual CWC storage structures are posted with radiation signs that are visible from all angles of approach and are visible from a distance of at least 7.6 meters. Each storage structure used for waste storage is posted with a sign, printed in English, near the entrance reading "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT," or an equivalent legend, in black and red letters on a white background. In addition to these signs, the fences around CWC and 200 West Area are posted with signs warning against unauthorized entry. The signs also are visible from all angles of approach.

6.1.2 Waiver [F-1b]

Waiver of the security procedures and equipment requirements for CWC is not requested. Therefore, the requirements of WAC 173-303-310 (1)(a) and (b) are not applicable to CWC.

6.2 INSPECTION PLAN [F-2]

This section describes the method and schedule for inspection of CWC. The purpose of inspections is to identify leaking containers, improperly stored containers, and degradation of containment and safety equipment and/or systems. These inspections help to ensure that situations do not exist that might cause or lead to the release of waste to the environment or that might pose a threat to human health. Abnormal conditions identified by inspections must be corrected on a schedule that prevents hazards to personnel, the public, and the environment as determined by a solid waste operations supervisor.

6.2.1 General Inspection Requirements [F-2a and F-2b]

The content and frequency of inspections are described in this section. Inspections, implemented through operating requirements, are documented on inspection checklists and log sheets. The schedule and inspection records are kept at MO-720. Inspection records are retained for a minimum of 5 years. The inspection checklists consist of a listing of items that are to be assessed during each inspection. A yes/no response is made for each listed item. A 'yes' response means that the item is in compliance with the conditions stated on the checklist. Any problems identified during the inspection, as indicated by a 'no' response on the checklist, are reported to the CWC operating organization.

6.2.1.1 Types of Problems. Each week a qualified operator performs an inspection. Discrepancies are noted in the additional information section of the checklist. When completed, the inspector prints their name, signs, and dates the inspection checklist, and sends a copy to the CWC operating organization. The inspection checklist is stored for a minimum of 5 years.

The fire systems at CWC are inspected annually by representatives of the Hanford Fire Department. Their inspection includes the following:

- Fire protection system inspection and testing
  - Fire alarm pull box inspection and testing
  - Manual and automatic fire door inspection and testing

- Dry-pipe sprinkler system inspection and testing
  - System visual inspection
  - System internal inspection
  - Pressure of incoming water supply inspection
  - Condition of gauges by visual inspection
  - Flow alarm device testing
  - Zone indicated on fire alarm control panel by visual inspection

- Ignitable or reactive waste storage area.

The CWC operations personnel conduct monthly inspections and tests of safety equipment. These inspections and tests include fire extinguishers, spill kits, and pressure gauges.

6.2.1.2 Frequency of Inspections. To ensure safety, the storage building (if occupied) and waste inventory are inspected daily when waste handling activities occur and only deficiencies are documented. The CWC operations organization performs a weekly audit inspection of CWC and the waste inventory (regardless of occupation) to ensure compliance with applicable federal and state regulations. Inspection frequencies are indicated on the respective inspection checklist.

Fire protection equipment, storage building alarms, and communication equipment are tested and inspected as identified in Section 6.2.1.1.

As required by WAC 173-303-395(1)(d), an annual inspection of CWC areas where ignitable or reactive waste is stored is performed by a professional knowledgeable of the Uniform Fire Code (NFPA 1997). The following information is entered into the CWC operating record as a result of this inspection:

- Date and time of the inspection
- Name of the person who performed the inspection
- Notation of the observations made
- Any remedial actions that were taken as a result of this inspection.

6.2.2 Schedule for Remedial Action for Problems Revealed [F-2c]

If inspections identify leaks, spills, and/or precipitation in the secondary containment, the resultant liquid will be removed on a schedule that prevents hazards to human health and the environment. Further corrective actions are discussed in the building emergency plan (Chapter 7.0). If corrosion is observed on containers, corrective actions will be pursued in a timeframe established by the CWC supervisor. Depending on the severity of the corrosion, corrective action could range from correcting on discovery or longer if procurement of needed materials and personnel are required.

If inspections identify floor areas where the sealant has been compromised (e.g., concrete is exposed), this area(s) is noted on the inspection checklist. Repairs are made in a timeframe established by the CWC supervisor, temperature conditions (per coating manufacturer recommendations) permitting.

Other conditions that are not a threat to human health and the environment will be dispositioned in a timeframe established by the operations supervisor.

6.2.3 Specific Process Inspection Requirements [F-2d]

The following sections detail the inspections to be performed at CWC.

6.2.3.1 Container Inspection [F-2d(1)]. Specific items and/or problems to be noted during weekly inspections include the following:

- Condition of concrete floor, curbing, and walls
- Appropriate safety and packaging equipment
- Container structural integrity
- Containers closed
- Corrosion of containers

- Evidence of spills or leaks
- Container labels and markings in place, legible, and unobscured
- Appropriate aisle spacing.

Records of inspection are maintained at MO-720 as detailed in Section 6.2.1.

6.2.3.2 Corrective Actions. On receipt, each container for storage is inspected by operations personnel to confirm appropriate documentation and compliance with the waste acceptance criteria before the container is stored. Refer to Section 6.2.2 for corrective actions.

6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following sections document the preparedness and prevention measures taken at CWC.

6.3.1 Equipment Requirements [F-3a]

The following sections describe the internal and external communications systems and the emergency equipment required.

6.3.1.1 Internal Communications. The onsite communication system at CWC includes a telephone located on a telephone pole at the southeast corner of the Waste Receiving and Staging Area and two-way radios maintained by operations personnel. The telephone system provides internal and external communication. Telephones also are available in the operations office at the south end of CWC (the location of internal communication equipment and the primary staging area is identified in the building emergency plan provided in Appendix 7A). Immediate emergency instruction to personnel working at CWC is provided by two-way radios.

6.3.1.2 External Communications. The CWC is equipped with devices for summoning emergency assistance from the Hanford Fire Department and/or emergency response teams as necessary. External communication is made via a telephone communication system, a two-way radio base station, and two-way portable radios.

A telephone is available in the operations office and on a telephone pole at the southeast corner of the Waste Receiving and Staging Area. The locations of external communication equipment and the primary staging area are identified in the building emergency plan provided in Appendix 7A. In addition, the following external communication systems are available for notifying persons assigned to emergency response organizations.

In the 2403-W and 2404-W Waste Storage Buildings, two telephones are provided for communications. In addition, the following external communication systems are available for notifying personnel assigned to emergency response organizations:

- Fire alarm pull boxes and fire sprinkler flow-monitoring devices-- connected to a system monitored around the clock by the Hanford Fire Department

- Telephone number 911 --contact point for the Hanford Facility; on notification, the Hanford Patrol Operations Center notifies and/or dispatches required emergency responders

- Telephone number 373-3800--single point of contact for the emergency duty officer; this number can be dialed from any Hanford Site telephone

- Crash-alarm telephone system--consists of selected telephones disassociated from the regular system and automatically connected to control stations

- Two-way radio system--the system accesses the Hanford Facility emergency network and can summon the Hanford Fire Department, Hanford Patrol, and/or any other assistance requested to handle emergencies.

6.3.1.3 Emergency Equipment. A detailed list of equipment is included in the building emergency plan provided in Appendix 7A. The Hanford Fire Department is capable of providing rapid response (less than 10 minutes) to fires within the 200 West Area. Portable fire extinguishers are provided on motorized equipment and vehicles, and in or near all CWC storage buildings. Personnel are trained in the use of emergency equipment (Chapter 8.0).

6.3.1.4 Water for Fire Control. The CWC has a potable water main installed for fire control (Appendix 2A). In the event that water pressure is lost, the Hanford Fire Department normally has a truck equipped with a hydraulically operated aerial ladder, and one backup fire engine without a boom that is used if the aerial ladder is inoperable. Fire engines have a pumping capacity of approximately 5,600 liters of water per minute.

6.3.2 Aisle Space Requirement [F-3b]

Aisle spacing for CWC structures is sufficient to allow the movement of personnel and fire protection equipment in and around the containers. This aisle spacing meets the requirements of the NFPA for the protection of personnel and the environment. The following are the specific requirements for individual structures in CWC.

- 2401-W, 2402-W, 2402-WB through 2402-WL, 2403-WA through 2403-WD, and 2404-WA through 2402-WC Waste Storage Buildings: Inspection aisle space is 0.76 meter or greater. Separation between oxidizers, combustibles, and other waste categories is accomplished by placing the waste on separate containment systems.

- Flammable and Alkali Metal Waste Storage Modules: Inspection aisle space is 0.76 meter or greater.

- Waste Storage Pad: Inspection aisle space is 0.76 meter or greater.

Rows of containers are placed no more than two containers wide in accordance with WAC 173-303-630(5)(c). The containers are loaded and unloaded through the rollup doors located at each storage building.

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Unloading Operations

In general, transport vehicles are positioned near the receiving building in a manner that provides an unobstructed work area for a powered forklift to offload the containers. Qualified operators ensure that the following inspections are carried out before waste is unloaded at CWC.

- Containers are inspected for damage before being unloaded for storage.
- Waste is not unloaded without the approval of operations supervision during inclement weather.
- Path to storage area is clear of obstructions.
- The truck is placed so that container movement occurs over an appropriate waste unloading area.

The containers are placed in the storage building(s) or the Mixed Waste Storage Pad as assigned on the associated waste storage documentation.

6.4.2 Run-Off

Chapter 4.0 contains information on run-off and run-on of liquid at CWC.

6.4.3 Water Supplies

Water is supplied from the Columbia River via the Hanford Site potable water system. All hose connections to the potable water line have a one-way check valve installed to prevent backflow. These check valves prevent contamination from entering the water supply lines from within CWC.

The water supply system (potable and fire sprinkler supply) is routed from two sources to provide a looped supply system per U.S. Department of Energy Order 6430.1A: one from the south near the 272-WA Building, which is approximately 457 meters away, and the second from the east near T Plant Complex, which is approximately 1,524 meters away.

6.4.4 Equipment and Power Failure

Loss of electrical power does not constitute an emergency situation. However, all alarms are supplied with a battery backup system that automatically engages when there is a failure of the normal power supply. Therefore, the storage buildings will not be occupied during power outages without adequate alternate substitutes for those systems except for personnel providing a fire watch.

Rechargeable battery-powered lighting units provide emergency illumination. Self-powered lights are located near all exits.

As described in Section 6.3.1.2, emergency communication equipment is available to summon emergency assistance in the event of a power loss.

6.4.5 Personnel Protection Equipment

If a leak is discovered, the following protection could be required: radiation protection coveralls, cloth shoe covers plus rubber boots, gloves, and a cloth cap. In addition, various types of respiratory devices are available if required. Personnel are directed to use a particular type of respiratory device, depending on the specific respiratory hazard that exists. Available respiratory protection equipment includes the following:

- Airpacks
- Filter masks with a graphite filter. This type of mask is for removing particulates from the respiratory stream
- Face masks with cartridges that react with various chemical fumes. These masks are used in special circumstances
- Full-face masks, with hoses attached to an air compressor some distance away, also are available when needed.

Personnel are required to be trained in using the various respiratory devices and must be checked for mask fit as necessary (Appendix 8A). Refer to Appendix 7A for information regarding actions taken during a spill or release to the environment.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE WASTE [F-5]

The following section describes prevention of reaction of ignitable, reactive, and/or incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste [F-5a]

All waste, including reactive waste, is stored in sealed, approved containers. The use of non-sparking tools is not required except at the Flammable and Alkali Metal Waste Storage Modules.

Smoking is prohibited within CWC structures. "NO SMOKING" signs are posted and are visible at 7.6 meters.

6.5.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [F-5b]

Based on the waste characteristics identified by the onsite generating unit or offsite generator, specific packaging instructions are provided by the CWC operating organization. Stored liquids are packaged in nonleaking inner containers and surrounded by sorbent material within appropriate liners inside steel containers (Chapter 4.0). Liquids are stored in CWC until treatment is available. Incompatible waste is not packaged within the same container.

Chapter 7.0

CONTENTS

APPENDIX

TABLE

7.0 CONTINGENCY PLAN [G]

The WAC 173-303 requirements for a contingency plan are satisfied in the following documents: Portions of the *Hanford Emergency Response Plan* [Attachment 4 of the HF RCRA Permit (DW Portion)] and portions of the *Building Emergency Plan for Central Waste Complex* (Appendix 7A).

The unit-specific building emergency plan also serves to satisfy a broad range of other requirements [e.g., Occupational Safety and Health Administration standards (29 CFR 1910), TSCA (40 CFR 761) and U.S. Department of Energy Orders]. Therefore, revisions made to portions of this contingency plan document that are not governed by the requirements of WAC 173-303 will not be considered as a modification subject to WAC 173-303-830 or Hanford Facility RCRA Permit (DW Portion) Condition I.C.3. Table 7-1 identifies which portions of the Building Emergency Plan are written to meet WAC 173-303 contingency plan requirements.

Table 7-1. Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173-303-350(3). (sheet 1 of 2)

Requirement	Attachment 4 of the HF RCRA Permit (DW Portion)	Building Emergency Plan
-350(3)(a) - A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360.	X[1] Section 1.3.2	X[1] Section 7.1 through 7.3
-350(3)(b) - A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported pursuant to the requirements of WAC 173-303-370(5), Manifest system, reasons for not accepting dangerous waste shipments.	X[1] Section 1.3.2	X[1,2] Section 7.2
-350(3)(c) - A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340(4).	X Table 3-1	
-350(3)(d) - A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810 (14)(a)(i)), rather than as part of the permit application.		X[3] Section 13.0
-350(3)(e) - A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.	X Hanford Fire Department: Appendix C	X Section 9.0

Table 7-1. Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173-303-350(3). (sheet 2 of 2)

Requirement	Attachment 4 of the HF RCRA Permit (DW Portion)	Building Emergency Plan
-350(3)(f) - An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.	X[4] Figure 5-2	X[5] Section 1.5

[1]The *Hanford Emergency Response Plan* contains descriptions of actions relating to the Hanford Site Emergency Preparedness System. No additional description of actions are required if emergency planning activities are addressed. If other credible scenarios exist or if emergency procedures at the unit are different, the language contained in the Building Emergency Plan will be used during an event by a Building Emergency Director.

[2]This requirement only applies to TSD units which receive shipment of dangerous or mixed waste defined as off-site shipments in accordance with WAC 173-303.

[3]Emergency Coordinator names and home telephone numbers are maintained separate from any contingency plan document, on file in accordance with Hanford Facility RCRA Permit, DW Portion, General Condition II.A.4. and is updated, at a minimum, monthly.

[4]The Hanford Facility (sitewide) signals are provided in this document. No unit/building signal information is required unless unique devices are used at the unit/building.

[5]An evacuation route for the TSD unit must be provided. Evacuation routes for occupied buildings surrounding the TSD unit are provided through information boards posted within buildings.

Chapter [illegible]

CONTENTS

APPENDIX

8.0 PERSONNEL TRAINING [H]

The training plan provided in Appendix 8A discusses training requirements pertaining to CWC.

The training program is designed to be compliant with all applicable federal, state, and DOE-RL training requirements. The training program complies with requirements contained within WAC 173-303-330 for the development of a written dangerous waste training program. The training program is designed to prepare personnel to manage and maintain TSD units in a safe, effective, efficient, and environmentally sound manner. In addition to preparing personnel to manage and maintain TSD units under normal conditions, the training program ensures that personnel are prepared to respond in a prompt and effective manner should offnormal or emergency conditions occur.

Chapter 9.0

CONTENTS

9.0 EXPOSURE INFORMATION REPORT

The CWC does not store, treat, or dispose of hazardous waste in a surface impoundment or a landfill as defined in 40 CFR 270.10 and RCRA, Section 3019. Therefore, exposure information is not required.

CONTENTS

10.0 WASTE MINIMIZATION [D-9]

To fulfill the requirements of 40 CFR 264.73(b)(9), a certification that the CWC has a waste minimization/pollution prevention program in place is entered, annually, into the CWC operating record.

Chapter 10

CONTENTS

FIGURE

This page intentionally left blank.

11.0 CLOSURE AND FINANCIAL ASSURANCE [I and I-1i]

This chapter presents the closure plan for CWC. Closure of CWC will comply with WAC 173-303-610 regulations for TSD units. As a storage and treatment unit, the CWC is not anticipated to become extensively contaminated by dangerous waste.

CWC is operated as a clean, well-maintained unit. Detailed records are maintained of the materials stored at CWC. Spills and other unusual occurrences are handled promptly and documented. The closure approach will be clean closure. Consistent with the criteria that must be met to clean close a TSD unit, no postclosure activities will be necessary [refer to General Information Portion (DOE/RL-91-28)]. Clean closure may be pursued for one or more structures at the CWC (partial closure) or for the entire CWC. The closure process will be the same for partial closure or closure of the entire CWC. This chapter describes the performance standards that will be met and closure activities that will be conducted to achieve clean closure.

Federal facilities are not required to comply with WAC 173-303-620 as is stated in the regulations and as described in Condition II.H.3. of the Dangerous Waste Portion of the Hanford Facility RCRA Permit (Ecology 1994).

11.1 CLOSURE PLAN [I-1]

The following sections address closure performance standards, waste removal, and decontamination standards.

11.1.1 Closure Performance Standard [I-1a]

These sections describe the performance and removal or decontamination standards to be applied to CWC.

11.1.1.1 Performance Standard. This plan has been developed to close CWC in a manner that meets the closure performance standards of WAC 173-303-610(2).

In general, these standards can be achieved by removing, to background levels or regulatory thresholds, dangerous waste from CWC, and by decontaminating and removing all equipment, structures, soils, or other materials containing or contaminated with dangerous waste or waste residue.

11.1.1.2 Removal or Decontamination Standard. Clean closure of CWC requires removal and disposal of all dangerous waste present in the storage structures, removal and disposal of all contaminated equipment and structural components, decontamination of any contaminated storage building surfaces, remediation of any contaminated soil attributable to CWC within the storage unit boundary, and restoration of the area. Any materials, equipment, or structures that are removed from CWC will be designated in accordance with WAC 173-303-070 and disposed of accordingly. Because soil contamination from CWC operations is not expected, no sampling is planned for clean closure. The CWC will be considered clean when surfaces are free of dangerous waste contamination, if there are no measurable amounts of radiological contamination above background levels, and no obvious visual signs of potential dangerous waste contamination.

Should decontamination be necessary, as determined by visual inspection or survey of the CWC structures, clean closure will require removal and disposal of all dangerous waste, contaminated equipment, and rinsates to standards specified in WAC 173-303-610(2)(b). If during inspection contamination is found warranting sampling and analysis of contaminated structures, equipment, or soils, this closure plan will be amended.

11.1.2 Closure Activities [I-1b]

Closure of CWC will ensure that the storage buildings, storage modules, storage pad, and associated equipment are not contaminated (contamination is not expected). Any sampling and analysis activities required for clean closure will be accomplished in accordance with an amended closure plan containing a sampling and analysis/decontamination plan that meets the requirements in place at the time of closure.

Closure activities could entail visual inspections, surveys, decontamination, removal, and disposal of the structure, equipment and soil (sampling is not expected). These activities consist of the following:

- Perform document review and interview personnel to determine spill history
- Remove inventory of stored waste
- Perform visual inspection and where necessary, a radiation survey of building, structure, and surrounding area
- Decontaminate and remove equipment for reuse and/or disposal if necessary
- Decontaminate structures, including floors and walls if necessary
- Decontaminate storage areas if necessary
- Perform verification survey of the decontaminated structures and storage areas
- Remediate and verify, as necessary, or dispose of contaminated sections of each component
- Dispose of all contaminated materials and rinsates generated during the closure activities
- Decontaminate or dispose of equipment used in performing closure activities
- Restore the area after closure activities are complete
- If sampling activities are determined necessary to obtain clean closure, initiate closure plan modification to accommodate closure. Follow revised closure plan.
- Obtain Professional Engineer (PE) certification that closure activities were completed in accordance with the approved plan.

For partial closure of CWC, Ecology will be notified in writing that partial closure activities are beginning. The written notification will indicate those portions being closed. Closure activities for partial closure will be the same as closure for the entire CWC.

11.1.3 Maximum Extent of Operation [I-1b(1) and I-1c]

An estimated maximum waste inventory is identified in Chapter 4.0, Table 4-1. The volumes are given as 208-liter container equivalents. The volume within each container consists of waste and all necessary packing material.

11.1.4 Inventory Removal, Disposal or Decontamination of Equipment, Structures, and Soils [I-1b(2) and (3)]

The CWC provides storage capacity for both onsite and offsite waste generated before final disposal. At the time of closure, no waste will remain at CWC.

11.1.4.1 Removal of Waste Inventory. At closure, all containers of waste will be removed from the storage structures. The containers of waste will be transferred to another permitted onsite TSD unit or permitted offsite facility. The waste could be moved out of the storage structures at different times, first removing the containers from one of the structures. This would allow some containers to be moved into a still active structure, while the other structure(s) undergoes closure activities.

11.1.4.2 Survey and Inspection. After removal of the waste containers, a radiation survey will be performed on the interior walls, grating(s), containment basin(s), and floor(s). Any area showing measurable radiological levels above background levels will be noted for closer examination during visual inspection.

A visual assessment of whether spills have occurred within the CWC will be performed after all waste has been removed. The visual inspection also will include evaluation to the extent possible of the interior walls, containment areas, grates, and floors. Photographs of the components will be taken during visual inspections and included with inspection checklist (Figure 11-1). For areas that show potential dangerous waste contamination, field personnel will determine whether to remove and dispose or to decontaminate.

11.1.4.3 Decontamination and Removal of Equipment. Most of the equipment at CWC is used for container handling and storage. This equipment could become contaminated in the event of a leaking or ruptured container.

The equipment will be removed from the area and managed or handled by one of the following methods: (1) decontamination and recycle or reuse, (2) disposal as dangerous waste, (3) disposal as mixed waste, or (4) disposal as a radiological waste. The method to be used will be determined based on the specific piece of equipment, the level of contamination, the waste designation performed in accordance with WAC 173-303-070, and the estimated quantity of waste to be generated during decontamination. Final disposal will be determined using appropriate techniques available at the time of closure.

11.1.4.4 Decontamination of Structures. Decontamination of contaminated structures or contaminated portions thereof will begin with a visual inspection and, where necessary, a radiation survey. In areas where surveys show measurable radioactivity, decontamination will be performed. Any waste deposits found during the visual inspection will be removed and disposed as appropriate.

The floors, trenches, sumps, and interior walls of each contaminated structure or contaminated portion thereof will be washed down. The method of decontamination used will depend on the nature of the area of contamination. Decontamination methods might include wiping, washing, brushing, or scrubbing, and rinsing with water or other appropriate method. One possible method for this washdown is a high-pressure, low-volume detergent wash to target both organic and inorganic constituents. Decontamination procedures will address minimization of liquid used and how the wash will be conducted. The decontamination liquids will be collected in the trenches and sumps and pumped into containers such as bung-type 208-liter containers. The pump will be rinsed three times and the rinsate stored in containers, as detailed previously. Decontamination waste will be designated and the appropriate method of disposal determined.

11.1.4.5 Decontamination of the Waste Storage Pad. Decontamination will begin with a visual inspection and, where necessary, a radiation survey. The results of these two activities will be treated as described in Section 11.1.4.4. If contaminated, the storage pad will undergo a decontamination wash similar to that described in Section 11.1.4.4.

11.1.4.6 Verification Survey and Inspection. Following decontamination of any contaminated equipment, structures, or storage areas, a verification survey and inspection will be performed. Results will be documented on the inspection checklist (Figure 11-1). If decontamination was successful and no measurable amounts of radiological contamination above background are found, the clean closure process will conclude and certification will occur (Section 1.3).

11.1.4.7 Remediation. Remediation activities will commence if contamination is found during the verification survey inspection (Section 11.1.4.6) or if contamination is found in soils or the immediate area surrounding the CWC storage structures. Remediation activities are not expected to occur as the CWC is well operated and any spills occurring during the operating life of the TSD unit are completely cleaned up. Remediation of soils or surrounding areas will be determined by the initial survey and results from the documentation review and interview of personnel. If questions arise concerning whether soils or the surrounding areas should be remediated, the closure plan will be amended through a permit modification to address these questions.

In the unlikely event that contaminants are suspected to have penetrated the sealant, sampling will be performed as necessary to determine the extent of contamination. If sampling is necessary to achieve clean closure, the closure plan will be amended.

11.2 SCHEDULE FOR CLOSURE [I-1f]

The closure schedule is based on the time required to perform applicable closure activities described in Sections 11.1.2 and 11.1.4. Closure will be completed 180 days after the last shipment of waste is received at CWC [WAC 173-303-610(4)(b)] or structure(s) when partial closure is selected. In addition, notification by DOE-RL that the unit or structure(s) will no longer receive waste is a prerequisite of closure.

When a closure date is established for the overall TSD unit, a revised closure plan and schedule will be evaluated, including any additional closure activities required for clean closure. If closure plan modifications are necessary to achieve clean closure, a revised schedule will be proposed as part of the permit modification package.

For partial closure of the TSD unit, Ecology will be notified in writing that partial closure activities are beginning. The written notification will indicate those portions of the TSD unit being closed.

11.3 CERTIFICATION OF CLOSURE

PE certification of closure will cover only the portions of the CWC covered by the closure activities proposed (partial closure or closure of the entire unit). The PE certification will occur upon disposition of decontamination generated waste and completion of closure activities summarized in Section 11.1.2 and described in Section 11.1.4. The PE will provide a signed statement that meets the applicable requirements of WAC 173-303-610(6), certifying that the closure activities were performed in accordance with the technical specifications of the approved closure plan. A copy of the PE certification will be transmitted to Ecology and placed in the Administrative Record.

The PE will certify that the unit has been closed in accordance with the approved partial closure plan. The PE certification is to confirm that the activities took place as described. The PE is not responsible for corroborating information on any part of the partial closure plan not addressing activities completed in support of closure.

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EXAMPLE

INSPECTION CHECKLIST FOR CWC CLOSURE ACTIVITIES

1. Storage structure identification: __________

2. Component description (e.g., wall, wood floor): __________

3. Material (e.g., wood, metal): ______________

NOTE: Attach photographs taken during visual inspection.

INITIAL INSPECTION
date: _______ time: ______

4. Radiation survey performance standard met? (at or below background):
   ____

5. Visual inspection performance standard met? (no obvious visual signs of potential contamination): __________________________

6. Comments on survey/inspection (or N/A if not applicable): __________________________
   ____
   ____

7. If photographs taken, attach

DECONTAMINATION, if required
date: _______ time: ______

8. (If required to move the structures) Radiation survey performance standard at decontamination location met? (at or below background):
   ____

9. Decontamination method used (or N/A): ________________________________
   ____
   ____
   ____

10. Comments on decontamination (or N/A): ________________________________
    ____
    ____
    ____

11. If photographs taken, attach

Figure 11-1. Example Inspection Checklist for CWC Closure Activities. (sheet 1 of 2)

VERIFICATION INSPECTION, if required
date: _______ time: _______

12. Radiation survey performance standard met? (at or below background):
____

13. Visual inspection performance standard met? (no obvious visual signs of potential contamination): ____________________________________

14. Comments on verification inspection (or N/A): ____
____
____
____

15. If photographs taken, attach.

WITNESSES:

_________________________	________________/_______
Print: name and title	Signature Date
_________________________	________________/_______
Print: name and title	Signature Date

Figure 11-1. Example Inspection Checklist for CWC Closure Activities. (sheet 2 of 2)

CONTENTS

12.0 REPORTING AND RECORDKEEPING

Reporting and recordkeeping requirements that could be applicable to the Hanford Facility are described in Chapter 12.0 of the General Information Portion (DOE/RL-91-28). Not all of these requirements and associated reports and records identified in Chapter 12.0 of the General Information Portion are applicable to the CWC. Those reporting and recordkeeping requirements determined to be applicable to the CWC are summarized as follows:

- Contingency plan and incident records (as identified in the General Information Portion, DOE/RL-91-28):

  - Immediate reporting
  - Written reporting
  - Shipping paper discrepancy reports.

- Unit-specific Part B permit application documentation and associated plans

- Personnel training records

- Inspection records (unit)

- Onsite transportation documentation

- Land disposal restriction records

- Waste minimization and pollution prevention.

In addition, the following reports prepared for the Hanford Facility will contain input, when appropriate, from the CWC:

- Quarterly HF RCRA Permit modification report
- Anticipated noncompliance
- Required annual reports.

Annual reports updating projections of anticipated costs for closure and postclosure will be submitted as required by the HF RCRA Permit.

The CWC Operating Record 'records contact' is kept on file in the General Information file of the Hanford Facility Operating Record (refer to Chapter 12.0, DOE/RL-91-28).

Chapter 10

CONTENTS

13.0 OTHER FEDERAL AND STATE LAWS [J]

Federal, state, and local laws applicable to the CWC are discussed in Chapter 13.0 of the General Information Portion (DOE/RL-91-28). Generally, the laws applicable to the CWC include, but might not be limited to, the following:

Atomic Emergency Act of 1954
Federal Facility Compliance Act of 1992
Clean Air Act of 1977
Safe Drinking Water Act of 1974
Emergency Planning and Community Right-to-Know Act of 1986
Toxic Substances Control Act of 1976
National Historic Preservation Act of 1966
Endangered Species Act of 1973
Fish and Wildlife Coordination Act of 1934
Federal Insecticide, Fungicide, and Rodenticide Act of 1975
Hazardous Materials Transportation Act of 1975
National Environmental Policy Act of 1969
Washington Clean Air Act of 1967
Washington Water Pollution Control Act of 1945
Washington Pesticide Control Act of 1971
Model Toxics Control Act
Benton Clean Air Authority Regulation 1
State Environmental Policy Act of 1971.

Chapter [illegible]

CONTENTS

14.0 PART B CERTIFICATION [K]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5/22/98

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

Date

May 14, 1998

Co-operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

Date

CONTENTS

15.0 REFERENCES

DOE Order 6430.1A, *General Design Criteria*.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-63, *Annual Hanford Site Environmental Permitting Status Report*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit*, Number WA7890008967, revised periodically, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1996, *Dangerous Waste Permit Application Requirements*, Publication Number #95-402, Washington State Department of Ecology, Olympia, Washington.

ICBO, 1996, *Uniform Building Code*, International Conference of Building Officials, Whittier, California.

NFPA, 1997, *National Fire Protection Code*, updated periodically, National Fire Protection Association, Quincy, Massachusetts.

NIOSH, 1997, *Registry of Toxic Effects of Chemical Substances*, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, Washington, D.C.

55 FR 61, "Hazardous Waste Management System; Identification and History of Hazardous Waste; Toxicity Characteristics Revision".

APPENDICES

APPENDICES

APPENDIX 2A

APPENDIX 2A

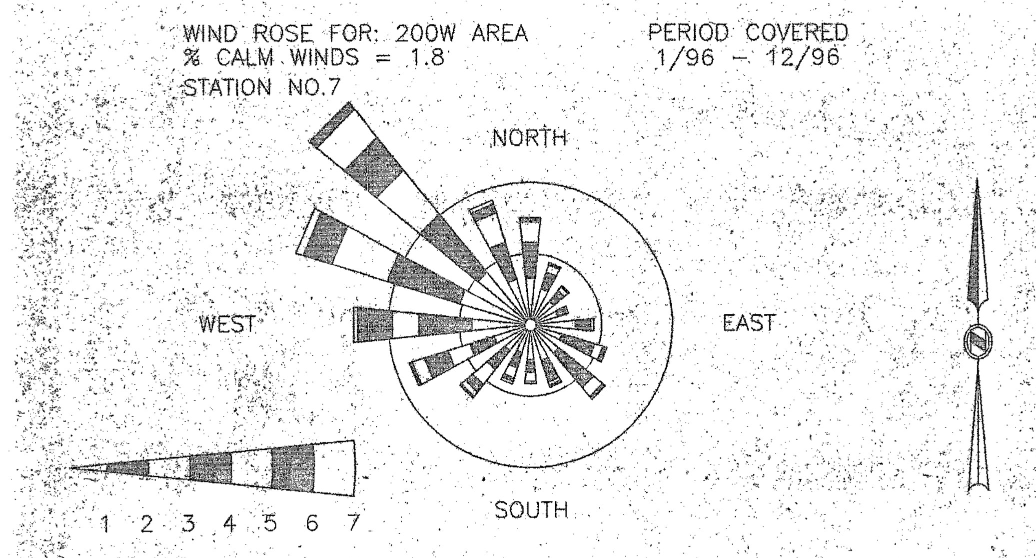
TOPOGRAPHIC MAP

APPENDIX 2A

CONTENTS

WIND ROSE FOR: 200W AREA
% CALM WINDS = 1.8
STATION NO.7

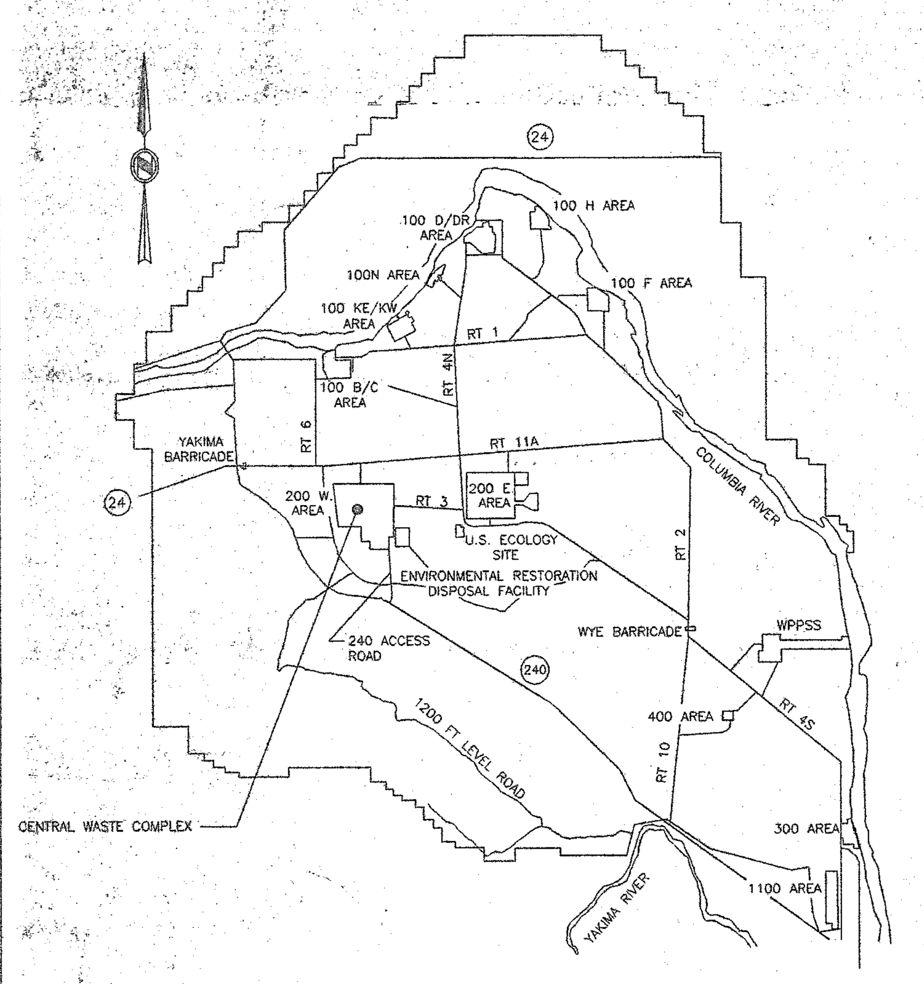
PERIOD COVERED
1/96 - 12/96



PADDLES INDICATE DIRECTION WIND IS COMING FROM.
RADIAL GRIDS REPRESENT 5.0% AND 10.0% OCCURRENCE.

WIND CLASS	MILES/HOUR
1	>1.0 - 3.0
2	4.0 - 7.0
3	8.0 - 12.0
4	13.0 - 18.0
5	19.0 - 24.0
6	25.0 - 31.0
7	32.0 +

WIND ROSE



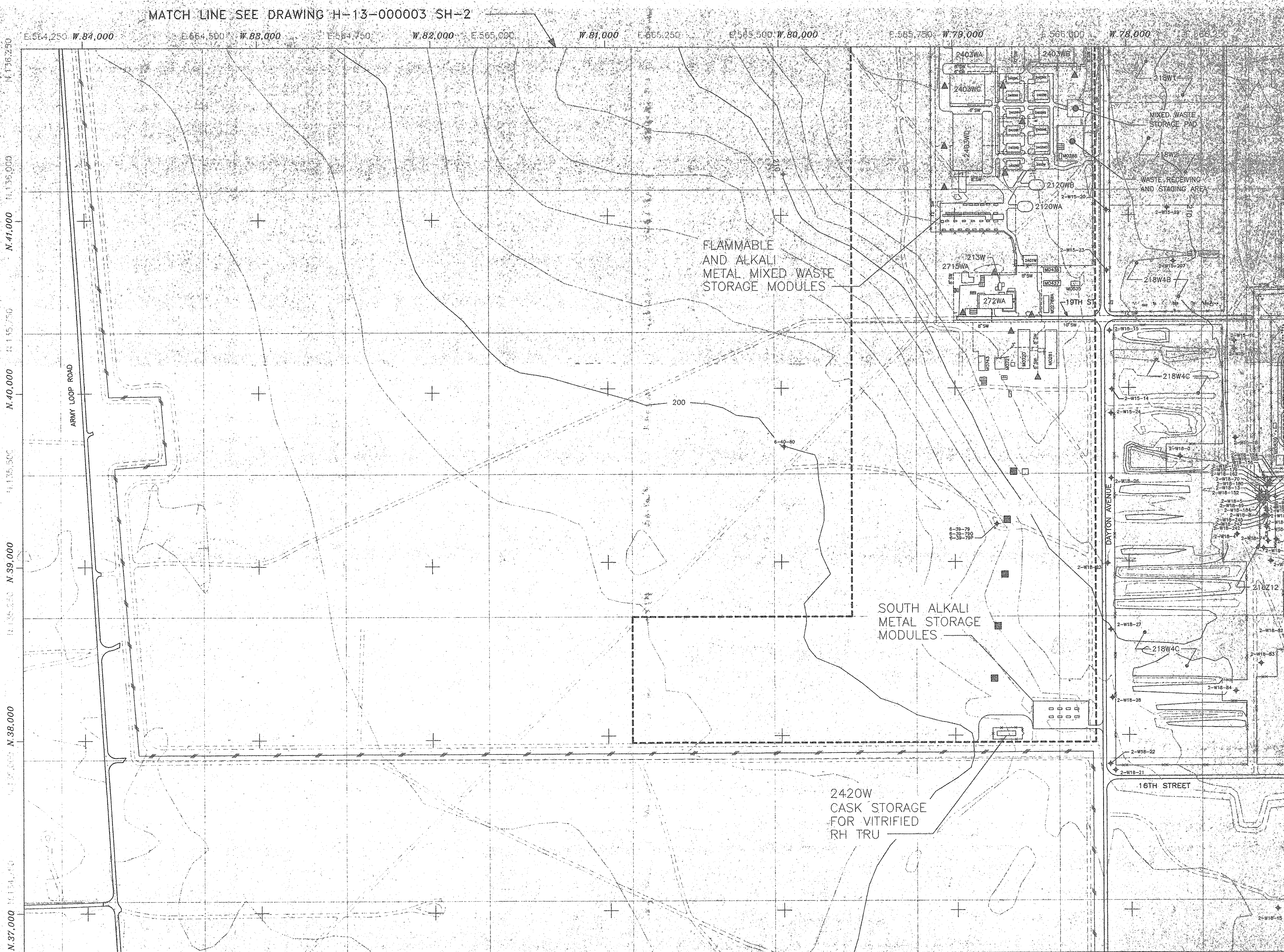
KEY PLAN

SCALE: NONE

LEGEND

W.47,000 N.43,000	HANFORD PLANT COORDINATES (FEET)		BUILDINGS/STRUCTURES & TOWERS
E.576,250 N.136,000	WASHINGTON STATE COORDINATES (METERS)	242A	BUILDING NUMBER
215	INDEX CONTOUR (METERS)		TANKS
	INTERMEDIATE CONTOUR		FIRE HYDRANT
	IMPROVED ROAD	2-E25-25	WELL
	UNIMPROVED ROAD		INJECTION WELL
	DIRT ROAD	216-A-	CRIB
	SIDEWALKS\PARKING LOTS	218-E-	BURIAL GROUND
	RAILROADS		STEAM
	SECURITY,WARNING,MISC FENCES		SANITARY WATER
	POST & CHAIN (CRIB,BURIAL GROUND FENCES)		PROCESS SEWER
	PERIMETER FENCES		TSD UNIT BOUNDARY

MATCH LINE SEE DRAWING H-13-000003 SH-2



GENERAL NOTES

1. THIS MAP IS BASED ON AERIAL PHOTOGRAPHY FLOWN ON 6-24-89. THE ORIGINAL TOPOGRAPHIC MAP WAS PREPARED BY MERRICK & COMPANY AND CERTIFIED TO MEET NATIONAL MAP ACCURACY STANDARDS. OFFICIAL COPIES OF THE MERRICK MAPS THAT SHOW THE CERTIFICATE ARE LOCATED IN THE LOCKHEED MARTIN ENGINEERING FILES AS DRAWING NUMBERS H-2-79476 SHEET 1 AND H-2-79477 SHEET 1 THRU 37. NAMES OF ADDITIONAL FEATURES AND THE TITLE BLOCK WERE ADDED BY WESTINGHOUSE HANFORD COMPANY.
2. WASHINGTON STATE PLANE COORDINATE SYSTEM: THE OFFICIAL COORDINATE SYSTEM AS DEFINED BY THE REVISED CODE OF WASHINGTON (RCW). THE HANFORD SITE LIES WITHIN THE WASHINGTON COORDINATE SYSTEM, SOUTH ZONE. THIS GRID COVERS THE ENTIRE SITE AND USES X (EASTINGS) AND Y (NORTHINGS) COORDINATES.

   HORIZONTAL DATUM: NAD-83 LAMBERT PROJECTION. WASHINGTON STATE PLANE COORDINATES ARE SHOWN IN METERS.
   CONTOUR INTERVAL: 2 METERS.
3. HANFORD PLANT GRID: A LOCAL GRID SYSTEM WITH ITS INITIAL POINT NORTHEAST OF THE 400 AREA. IT COVERS 200 EAST AND 200 WEST AREA AS WELL AS GENERAL SITE WORK SUCH AS WELLS AND BURIAL GROUNDS. HANFORD COORDINATES ARE SHOWN IN FEET.
4. THE FOLLOWING BUILDINGS/STRUCTURES ARE NOT USED FOR TREATMENT, STORAGE, OR DISPOSAL OF REGULATED WASTE: M0281, M0288, M0437, M0438, M0535, M0720, M0721, M0743, 213W, 272WA, 2715WA, M0278WA, 2120WA, 2120WB SOUTH ALKALI METAL STORAGE MODULES, AND 2420W CASK STORAGE FOR VITRIFIED REMOTE-HANDLED TRANSURANIC WASTE.

SITE PLAN

SCALE: 1:3000

0 30 60 120 180 240

1 cm = 30 meters

THIS MAP IS TO BE USED FOR REFERENCE PURPOSES ONLY.
DO NOT USE THIS MAP FOR CONSTRUCTION PURPOSES.

DWG NO	TITLE
DRAWING TRACEABILITY LIST	

REF NUMBER	TITLE
H-2-827751	CIVIL SITE PLAN
H-13-000209	200 AREA TOPOGRAPHICAL MAP
H-13-000210	200 AREA TOPOGRAPHICAL MAP
H-13-000217	200 AREA TOPOGRAPHICAL MAP
H-13-000218	200 AREA TOPOGRAPHICAL MAP
H-13-000225	200 AREA TOPOGRAPHICAL MAP
H-13-000226	200 AREA TOPOGRAPHICAL MAP

REFERENCES

NEXT USED ON H-13-000200

REV NO	DESCRIPTION	REV BY DATE	CHK BY DATE	DFTG APVD DATE	COG ENGR	OTHER	OTHER
1	REVISED PER ECN-644851	RBT 3-25-98	SR 3/26/98	3/26/98	RW 3/30/98	3/30/98	3/30/98

REVISIONS

CADFILE N000003A CADCODE DOS:6.0:ACD2:12.0:SS

		DATE
DRAWN	BR KAMPII	4-25-91
CHECKED	GD TILLEY	9-18-91
DFTG APVD	DC BOOTHROYD	9-18-91
COG ENGR	RW WHITLOCK	9-18-91
APVD		
APVD	D COWEN	9-18-91
APVD		
APVD		
APVD		
APVD		

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
Fluor Daniel North West

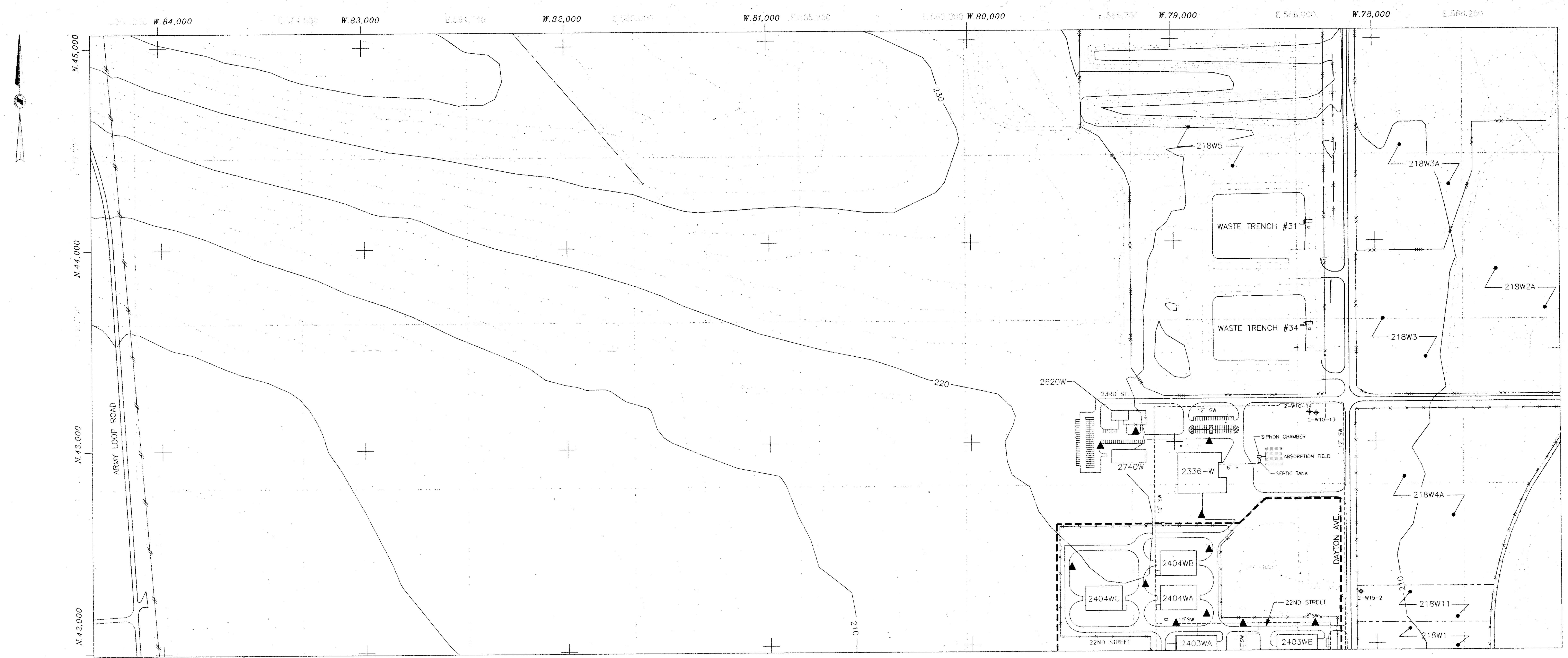
CENTRAL WASTE COMPLEX TOPOGRAPHIC MAP

SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	2403WA	0110	H-13-000003	1

SCALE SHOWN EDT 124619 SHEET 1 OF 2

CHK PRINT DATE COMMENT PRINT DATE

54-6000-027(5/89)



MATCH LINE SEE DRAWING H-13-000003 SH-1

SITE PLAN

SCALE: 1:3000

0 30 60 120 180 240

1 cm = 30 meters

SEE DRAWING H-13-000003 SH-1 FOR LEGEND, GENERAL NOTES & WIND ROSE

THIS MAP IS TO BE USED FOR REFERENCE PURPOSES ONLY. DO NOT USE THIS MAP FOR CONSTRUCTION PURPOSES.

REF NUMBER	TITLE
H-2-131741	WRAP MODULE I LAYOUT AND UTILITY PLAN
H-13-000209	200 AREA TOPOGRAPHIC MAP
H-13-000210	200 AREA TOPOGRAPHIC MAP

REFERENCES

NEXT USED ON H-13-000200

DWG NO	TITLE

DRAWING TRACEABILITY LIST

REV NO	DESCRIPTION	REV BY DATE
1	REVISED PER ECN-644851	RBT 3-26-98

REVISIONS

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DRAWN	BR KAMPH	4-25-91
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COG ENGR	RW WHITLOCK	9-19-91
APVD	D COWEN	9-19-91

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
Fluor Daniel North West

CENTRAL WASTE COMPLEX
TOPOGRAPHIC MAP

SIZE F | BLDG NO 2403WA | INDEX NO 0110 | DWG NO H-13-000003 | REV 1

SCALE SHOWN | EST 124615 | SHEET 2 OF 2

H-13-000003 2 of 2 1

APPENDIX 3A

APPENDIX 3A

CENTRAL WASTE COMPLEX WASTE ANALYSIS PLAN

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CONTENTS

CONTENTS (cont)

APPENDIX

FIGURES

TABLE

GLOSSARY

ALARA	as low as reasonably achievable
ASTM	American Society for Testing and Materials
AWMP	alternative waste management plan
CAP	corrective action plan
COLIWASA	composite liquid waste sampler
CFR	Code of Federal Regulations
CWC	Central Waste Complex
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objectives
Ecology	Washington State Department of Ecology
HNF	Hanford Nuclear Facility (document identifier)
LDR	land disposal restriction
LLBG	Low-Level Burial Grounds
MSDS	material safety data sheet
NDA	nondestructive assay
NDE	nondestructive examination
PCB	polychlorinated biphenyl
PES	performance evaluation system
pH	negative logarithm of the hydrogen-ion concentration
QA/QC	quality assurance and quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	Revised Code of Washington
SWITS	solid waste information tracking system
SWMU	solid waste management unit
TRU	transuranic
WAC	Washington Administrative Code
WAP	waste analysis plan
WSRd	waste specification record
°C	degrees Celsius

METRIC CONVERSION CHART

The following conversion chart is provided to the reader as a tool to aid in conversion.

Into metric units | Out of metric units

If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

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

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1.0 UNIT DESCRIPTION

The purpose of this waste analysis plan (WAP) is to document the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that are undertaken for waste accepted for storage at the Central Waste Complex (CWC), which is located in the 200 West Area of the Hanford Facility, Richland, Washington. Because dangerous waste does not include the source, special nuclear, and by-product material components of mixed waste, radionuclides are not within the scope of this documentation. The information on radionuclides is provided only for general knowledge.

1.1 DESCRIPTION OF UNIT PROCESSES AND ACTIVITIES

The CWC is a nonland-based unit consisting of various buildings, storage modules, and storage pad (Figure 1-1). The CWC structures are used for the storage of waste and are subject to *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303 and 40 Code of Federal Regulations (CFR) 761.

The CWC consists of the 2401-W, 2402-W, 2403-W, and 2404-W waste storage buildings, Flammable and Alkali Metal Waste Storage Modules, the waste storage pad, and the waste receiving and staging area (Figures 1-2 through 1-8). Further discussion on these structures can be found in Chapter 2.0 of the *Hanford Facility Dangerous Waste Permit Application, Central Waste Complex* (DOE/RL-91-17).

1.1.1 How Waste is Accepted, Moved, Processed, and Managed

The following sections describe the different types of information and knowledge used for waste acceptance. The movement, processing, and management of waste at the CWC is described in Chapter 4.0 of the CWC dangerous waste permit application documentation (DOE/RL-91-17).

1.1.1.1 Narrative Process Descriptions. The onsite generating unit, offsite generator, and treatment, storage, and/or disposal (TSD) unit transferring waste to the CWC is hereafter referred to as a 'generator' unless otherwise denoted in this WAP.

Waste that meets land disposal restriction (LDR) requirements, as specified in 40 CFR 268 and WAC 173-303-140, is stored in the CWC. Waste not meeting LDR requirements, but awaiting further treatment offsite or onsite either at the Waste Receiving and Processing Facility (WRAP) or the T Plant Complex (T Plant) can be stored at the CWC. The CWC unit-specific operating record will contain information necessary to meet LDR requirements for any waste awaiting further treatment. Containerized waste that is not fully characterized or is awaiting sampling results can be stored in CWC (DOE/RL-91-17). The Hanford Facility is required to sample certain waste depending on the type of treatment standard to ensure that the waste or treatment residuals are in compliance with applicable LDR requirements. Such testing is performed according to the frequency specified in this WAP.

1.1.1.2 Waste Acceptance Process. CWC waste acceptance process consists of following activities:

- <u>Waste Stream Approval.</u> The generator provides information concerning each waste stream on a waste profile sheet. The waste stream information is reviewed against the CWC waste acceptance criteria. If the waste stream information is sufficient and meets the applicable acceptance criteria, the waste stream is approved. In addition, the initial verification frequency for the waste is determined in accordance with the requirements found in the performance evaluation program (PES) (Section 1.1.1.3). For a more complete description of the waste stream approval process, refer to Section 2.1.1.

- Waste Shipment Approval. The generator provides specific data for each waste container on the container data sheet. The container data are reviewed against the waste profile sheet data and the CWC acceptance criteria before being approved for shipment. In addition, the CWC operating organization determines if any of the containers require verification based on the verification frequency as determined by PES. For a more complete description of the waste shipment approval process, refer to Section 2.1.2.

- Verification. Verification activities include container receipt inspection, physical screening, and/or chemical screening. A percentage of waste shipments and containers are selected for receipt verification during the waste shipment approval process. These containers can be inspected visually, verified by NDE, or sampled for field or laboratory analysis to confirm that the waste matches the waste profile and container data information supplied by the generator. Any discrepancies between the verification results and the waste profile sheet must be resolved before final acceptance at CWC in accordance with the conformance issue resolution process found in Section 1.1.1.3.3.

1.1.1.2.1 Types of Acceptable Knowledge. When collecting documentation on a waste stream or container, the CWC operating organization or representative organization, hereafter referred to the 'CWC operating organization', must determine if the information provided by the generator is acceptable knowledge. Acceptable knowledge requirements are met using any one or a combination of the following types of data:

- Mass balance from a controlled process that has a specified input for a specified output
- Material safety data sheets (MSDSs) on unused chemical products
- Test data from a surrogate sample
- Analytical data on the waste or a waste from a similar process.

In addition, acceptable knowledge requirements can be met using a combination of analytical data or screening results and one or more of the following:

- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Radiation work package
- Procedures and/or methods
- Process flow charts
- Inventory sheets
- Vendor information
- Mass balance from an uncontrolled process (e.g., spill cleanup)
- Mass balance from a process with variable inputs and outputs (e.g., washing/cleaning methods).

If the information is sufficient to quantify constituents and characteristics as required by the regulations and CWC acceptance criteria, the information is considered acceptable knowledge. The CWC acceptance criteria is defined as the requirements found in the WAP and the associated Part A, Form 3, (DOE/RL-91-17, Chapter 1.0).

1.1.1.3 Description of Waste Profile System. A PES is used to determine initial physical screening frequency of the generator. PES provides a periodic status of an individual generator's performance for waste received. Also, PES provides a mechanism for determining corrective actions and physical screening frequency adjustments when a problem has been discovered after waste has arrived at CWC.

1.1.1.3.1 Initial Physical Screening Frequency Determination. The initial physical screening frequency is determined based on the following process.

- CWC operating organization reviews the generator waste profile information to determine the relative potential for misdesignation or inappropriate segregation based on all relevant information, including any previous experience with the generator. Based on this review, CWC operating organization identifies any concerns associated with the following criteria:

  - documented waste management program
  - waste stream characterization information
  - potential for inappropriate segregation.

- Based on the identification of concerns during the review, the CWC operating organization establishes the initial physical screening frequency for the new generator's waste stream based on the following criteria:

  - Initial physical screening frequency of, at a minimum, 20 percent: No concerns identified (e.g., cleanup of contaminated soil where the soil has been well characterized and no other waste generation processes are occurring at that location)

  - Initial physical screening frequency of, at a minimum, 50 percent: Concern(s) identified in one criterion (e.g., a facility with many different processes that generate debris that have differing management paths)

  - Initial physical screening frequency of 100 percent: Concerns identified in two or more criteria (e.g., a facility with many different process and questionable segregation controls).

1.1.1.3.2 Monthly Performance Evaluation. A performance evaluation is used to trend a generator's performance and is used to raise the generator's overall physical screening frequency. The evaluation should be objective and should consider the conformance issues documented during the Preshipment Review and Verification functions. These conformance issues are tracked and filed. The conformance report is used to complete the generator evaluation and determine an increase in the following physical screening rate. At no time will physical screening rate exceed 100 percent.

- If the generator fails to provide properly completed and/or correct information and the result of the error would have or did lead to a regulatory violation, the physical screening rate increases by 25 percent per subsequent evaluation.

- If the generator fails to provide properly completed and/or correct information and the result of the error would have or did lead to mis-management of the waste, the physical screening rate increases by 10 percent per subsequent evaluation.

- If the generator provides paperwork inconsistencies or improperly completed and/or incorrect information that results in no mis-management of waste, the physical screening rate increases by 1 percent per 5 evaluations.

1.1.1.3.3 Conformance Issue Resolution. Conformance issues during verification could result in a waste container that does not meet CWC waste acceptance criteria. If a possible conformance issue is identified, the following actions are taken to resolve the issue.

- CWC operating organization compile all information concerning the possible conformance issue(s).

- The generator is notified and requested to supply additional knowledge to assist in the resolution of the concern(s). If the generator supplies information that alleviates the concern(s) identified, no further action is required.

- On determination that a conformance issue has been identified, the CWC operating organization personnel and the generator discuss the conformance issue and identify the appropriate course of action to resolve the container/shipment in question, i.e., pick another sample set, return the container/shipment, divert the container/shipment to another TSD unit that can accept the container/shipment and resolve the issue, or the generator resolves the issue at the TSD unit. If the conformance issue(s) results in the failure of a shipment, the physical screening frequency for all streams from the generator are adjusted to 100 percent until the issue(s) adequately can be addressed.

- On resolution of the initial conformance issue, CWC operating organization requests the generator to provide a corrective action plan (CAP) that clearly states the reason for the failure and describes the actions to be completed to prevent re-occurrence. The generator could request a reduction in verification of unaffected streams. This request must be accompanied by a justification that identifies why this stream(s) would not exhibit the same conformance issue.

- CWC operating organization reviews the CAP and stream justification for adequacy. If the CAP is inadequate, the generator remains at a physical screening rate of 100 percent. If the stream justification is adequate, CWC operating organization could provide an alternative frequency as denoted in Section 1.1.1.3.2.

1.1.2 Process Flow Diagram

Refer to Figure 1-9 for CWC waste analysis plan flowchart and Section 1.1 for description.

1.1.3 Operating Conditions

The following conditions and constraints apply to waste accepted at CWC. The waste container weight must be known and proper handing procedures imposed to ensure safe operations. The waste container radiation dose must be known and procedures must ensure that personnel exposure is kept as low as is reasonably achievable (ALARA). The quantity of fissile material within the waste must be determined and must be low enough to prevent a criticality hazard. Liquid waste can be received if packaged in inner glass, metal, or plastic containers and surrounded by sufficient sorbent to sorb twice the amount of liquid present. Containers of waste that cause pressurization must be vented. Radionuclide and dangerous waste constituent inventories in waste containers must be kept low enough to ensure that personnel emergency exposure limits are not exceeded.

1.2 IDENTIFICATION AND CLASSIFICATION OF WASTE

Waste is accepted for treatment (mixed waste) and/or storage (mixed and dangerous) in CWC except for the following waste types:

- Bulk liquid waste
- Explosive waste
- Shock sensitive waste
- Class IV oxidizer waste
- Infectious waste.

Refer to DOE/RL-91-17, Chapter 4.0 for precautions that are taken when ignitable, reactive, or incompatible waste is stored.

CWC manages the following waste types:

- Labpack liquids
- Solids/debris
- Sludges/soils.

These waste types could be classified as transuranic, low-level, mixed, and/or dangerous. Unless otherwise prohibited by this WAP, the waste could exhibit the characteristics of ignitable, toxic, corrosive, and/or reactive. In addition to the waste received at CWC for verification or processing, CWC generates mixed and dangerous waste. This waste material consists of items such as personal protective equipment (PPE), rags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, or other dangerous materials. Process knowledge, field screening, or sampling and analysis are used as appropriate to characterize these waste materials. Field screening and sampling are in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials are stored.

1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

The Part A, Form 3, permit application for CWC identifies dangerous waste numbers, quantities, and design capacity (DOE/RL-91-17, Chapter 1.0).

1.2.1 Alternative Waste Management Plan

For waste that cannot be stored and disposed in accordance with the requirements set forth in this WAP, an alternative waste management plan (AWMP) could be submitted to the Washington State Department of Ecology (Ecology) for review. Because many activities associated with or necessary to support waste management projects readily would not be predictable, some flexibility in timeframes for submitting, reviewing, and completing waste management plans would be necessary. In general, the following schedules should be observed.

- Submit the AWMP to the Ecology Project Manager at least 120 days before the project is expected to begin. The cover letter would state that "no reply within 45 days constitutes approval".

- Ecology reviews and provides comments (if any) within 45 days after receiving the AWMP.

- On receipt, comments would be resolved through project manager meetings or other workshops as agreed to by the U.S. Department of Energy, Richland Operations Office (DOE-RL) and Ecology. When the AWMP is resubmitted following resolution of Ecology's comments, the same review timeframes would be applicable.

- If no comments are received from Ecology within 45 days after the AWMP is submitted, the plan would be denoted as approved.

These timeframes could be adjusted by mutual agreement to account for project-specific needs and priorities. The AWMP review would ensure the following.

- The project does not endanger human health and the environment.
- The course of action chosen is well justified.

On gaining written or automatic approval, the DOE-RL would proceed as described in the AWMP. Should the plan require revision because of unforseen circumstances, the DOE-RL would resubmit the plan before continuing. On conclusion of the project, the DOE-RL would supply Ecology with a report outlining the activities performed and the results of these activities. During the next permit modification cycle and no later than 1 year, a modification to the WAP would be submitted. Approval for a AWMP that violates a specific prohibition outlined in the WAP is not permitted without first receiving a modification to the permit.

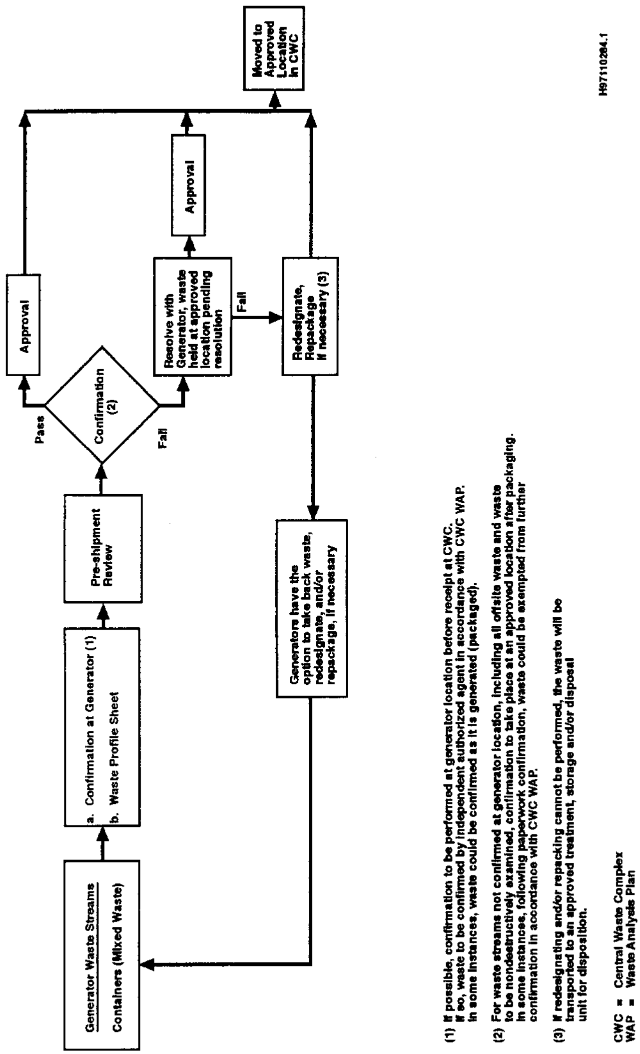

Figure 1-9. Central Waste Complex Waste Analysis Plan Flowchart.

2.0 CONFIRMATION PROCESS

The confirmation process includes completing appropriate pre-shipment reviews and verification steps and/or parameters. The requirement to confirm appears twice in WAC 173-303-300 and applies to two different scenarios.

Scenario 1: The process that an owner or operator uses to ensure knowledge supplied by the generator or TSD unit is acceptable knowledge to ensure that the waste is managed properly [WAC 173-303-300(1)]. This is accomplished by a pre-shipment review.

Scenario 2: The process that a facility owner or operator receiving offsite facility shipments uses to determine, by analysis if necessary, that each waste received at the facility matches the identity of the waste specified on the accompanying manifest or shipping paper [WAC 173-303-300(3)]. This is accomplished during verification.

2.1 PRE-SHIPMENT REVIEW

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to CWC. The review focuses on whether the waste stream is defined accurately, meets the CWC waste acceptance criteria, and the LDR status is determined correctly. Only waste determined to be acceptable for treatment and/or storage is scheduled. This determination is based on the information provided by the generator. The pre-shipment review consists of the waste stream approval and waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained from the generator during the pre-shipment review, at a minimum, includes all information necessary to safely treat and/or store the waste. The pre-shipment review ensures the waste has been characterized and the data provided qualify as 'acceptable knowledge' (Section 2.1.3).

2.1.1 Waste Stream Approval Process

The waste stream approval process consists of reviewing stream information supplied on a waste stream profile and attached analysis. At a minimum, the profile requests the following information:

- Generator information (e.g., name, address, point-of-contact, phone number)
- Waste stream name
- Waste generating process description
- Radiological knowledge (e.g., classification, reportable radionuclides, characterization method)
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)
- Designation information

- LDR information including identification of underlying hazardous constituents if applicable

- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used)

- Packaging information (e.g., container type, maximum weight, size)

- Attachments could consist of container drawings, process flow information, analytical data, etc.

This information is reviewed against the CWC waste acceptance criteria to ensure the waste is acceptable for receipt. If discrepancies are found during this review, additional information is requested that could include analytical data or a sample to be analyzed. If the waste cannot be received, the CWC operating organization will pursue acceptance of the waste at an alternative TSD unit or request the generator to pursue acceptance at an offsite facility.

On determination that the waste is acceptable, the CWC operating organization assigns the profile to a waste management path and establishes a waste verification frequency based on the requirements found in Sections 1.1.1.3 and 2.2.2.2.

2.1.2 Waste Shipment Approval Process

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

- Container identification number
- Profile number
- Waste description
- Generator information (e.g., name, address, point-of-contact, telephone number)
- Container information (e.g., type, size, weight)
- Waste numbers
- Extremely hazardous waste or dangerous waste
- Dose rate information
- Reportable radionuclides and quantities
- Waste composition
- Packaging materials and quantities

The pertinent information is entered into Solid Waste Information Tracking System (SWITS).

Where potential nonconformances exist in the information provided, (i.e., waste characteristics do not match the waste profile information, or additional constituents are expected to be present that do not appear on the documentation), the generator is contacted by the CWC operating organization or its representative for resolution. Refer to Section 6.0 for discussion on repeat and review frequency.

For each container, a technical review, physical screening determination, and chemical screening determination are performed as follows.

- **Technical review.** The individual container data are compared to the waste profile data to ensure the information is accurate. Every transfer or shipment is reviewed to ensure the waste meets the CWC waste acceptance criteria.

  Based on waste identification information provided, the waste designation is reviewed to ensure consistency with waste designations per WAC 173-303-070, as well as for technical accuracy to ensure the waste meets the waste acceptance criteria.

  If the transfer or shipment information is found to be acceptable, the CWC operating organization determines if any of the waste containers will be physically or chemically screened.

- **Physical screening determination.** Containers are chosen based on the methodology described in this section. The first criterion is based on whether pre-shipment review activities (document and characterization review) identify areas of potential concern. The second criterion is reviewing the current physical screening percentage (calculated using the following method) of containers received from said stream from said generator that have been received over the past 12 months as compared to those that have been physically screened. This criterion ensures that the minimum physical screening confirmation rates required by this WAP are met.

  - The number of containers selected for physical screening in shipments is determined by multiplying the total number of containers received during the previous 12 months for that stream including the containers identified in the shipment by the applicable verification rate, rounded up to the next integer. This selected group of containers constitutes a sample set.

  - Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation.

  - Containers are selected at random unless variability within the stream is noted. In this case containers representing different variations are selected (e.g., wood debris vs metallic debris).

- **Chemical screening determination.** Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation. Containers are selected at random unless variability within the stream is noted. In this case, containers representing different variations are selected (e.g., used oil, spent solvent).

On determining whether the shipment will be verified, the shipment is scheduled.

2.1.3 Acceptable Knowledge Requirements

The CWC operating organization ensures that all information used to make waste management decisions will be based on the requirements found in the following sections. For information determined to be 'acceptable knowledge', the CWC operating organization must determine if the information is adequate for management of the waste.

2.1.3.1 General Acceptable Knowledge Requirements. Adequate acceptable knowledge requires (1) general waste knowledge requirements, (2) LDR waste knowledge requirements, and/or (3) waste knowledge exceptions.

(1) **General Waste Knowledge Requirements**. At a minimum, the generator supplies enough information for the waste to be treated and/or stored at CWC. The minimum level of acceptable knowledge consists of designation data where the constituents causing a waste number to be assigned are quantified, and data that address any CWC operational parameters necessary for proper management of the waste.

Where the available information does not qualify as acceptable knowledge or is not sufficient to characterize a waste for management, the sampling and testing methods outlined in WAC 173-303-110 must be used to determine whether a waste designates as toxic characteristic, corrosive, and/or contains free liquids.

If a generator's process knowledge indicates that constituents, which if present in the waste might cause the waste to be regulated, are input to a process but not expected to be in the waste, sampling and analysis must be performed to ensure the constituents do not appear in the waste. This requirement can be met through chemical screening. This sampling and analysis is required only for initial characterization of the waste stream.

(2) **LDR Waste Knowledge**. Waste is stored in CWC while awaiting analytical results for LDR requirements. The CWC operating record contains all information required to document that the appropriate treatment standards have been met or will be met after the waste is treated.

For the purposes of this WAP, a representative sample is required to demonstrate compliance with a concentration-based treatment standard (refer to Section 4.5). Corroborative testing for the sample could be accomplished in the following manner.

- Generators could use onsite laboratories or other laboratories to certify that the waste meets LDR requirements. For waste that does not meet LDR requirements, the generator must supply information on the treatment methods necessary to meet LDR requirements and in accordance with WAC 173-303-380(1)(o).

- The CWC operating organization uses these analytical data to meet applicable requirements found in 40 CFR 268.7 and WAC 173-303-140(4).

(3) **Waste Knowledge Exceptions**. During waste retrieval from solid waste management unit trenches in the Low-Level Burial Grounds, waste can be transferred to CWC provided the waste meets the CWC waste acceptance criteria. In addition, hazardous debris, as defined in WAC 173-303-040, which is managed in accordance with 40 CFR 468.45, is not required to be sampled to meet federal and state-only LDR regulations.

2.1.3.2 Methodology to Ensure Compliance with Land Disposal Restrictions Requirements. All generators are subject to LDR requirements and are required to submit all information notifications and certifications described in WAC 173-303-380(1)(n) or (o). Mixed waste not meeting the treatment standards, but meeting the CWC waste acceptance criteria, can be stored at CWC (refer to Chapter 1.0, Section 1.1.1.1). The following are general requirements for offsite notifications or onsite information and supporting documentation.

- The waste is subject to LDR and the generator has treated the waste. The generator supplies the appropriate LDR certification information (40 CFR 268).

- The waste is subject to LDR and the generator has determined that the waste meets the LDR for disposal. The generator develops the certification based on process knowledge, and/or analytical data, and supplies the appropriate LDR certification information necessary to demonstrate compliance with the LDR treatment standards of 40 CFR 268 and WAC 173-303-140. State-only LDRs do not require this type of certification.

- The waste is subject to LDR and requires further treatment to meet applicable treatment standard. The generator supplies additional information concerning the waste and details any treatment necessary to meet applicable treatment standards.

A representative sample of the waste must be submitted for analysis to ensure that concentration-based LDR treatment standards are met. This sample could be taken by the CWC operating organization or the generator, and is required to comply with the treatment standards contained in 40 CFR 268.40 and 268.48 for underlying hazardous constituents.

2.2 VERIFICATION

Verification is an assessment performed by the CWC operating organization to substantiate that the waste received at CWC is the same as represented by the analysis supplied by the generator for the pre-shipment review. Verification is performed on waste received by CWC. Verification includes container receipt inspection, physical screening, and chemical screening. Waste is not accepted by CWC for treatment and/or storage until required elements of verification have been completed, including evaluation of any data obtained from verification activities.

All discrepancies identified during the verification process are resolved in accordance with Section 1.1.1.3.3.

2.2.1 Container Receipt Inspection

The container receipt inspection is a mandatory element of the confirmation process. Therefore, 100 percent of the transfers/shipments are inspected for damage and to ensure the waste containers are those indicated on the documentation. This activity is a mechanism for identifying any document discrepancies or damaged containers before acceptance. The container receipt inspection is performed by the CWC operating organization at CWC or at another onsite location. When another onsite location is chosen, the container receipt inspection will be completed within 24 hours of waste receipt.

2.2.2 Physical Screening Process

Physical screening is considered an additional verification element. This section describes the requirement pertaining to methods, frequency, and exceptions concerning the use of physical screening as a verification activity. Physical screening could be performed before the waste is shipped to CWC. When screening is performed at a location not within the Solid Waste Project (e.g., WRAP, T Plant Complex, Low-Level Burial Grounds), tamper resistant seals are applied to each container examined.

2.2.2.1 Physical Screening Methods. Each of the following physical screening methods, listed in order of preference, complies with the requirement to verify a waste. If a method other than 1 or 2 is used, the reasoning behind the method chosen must be documented in the operating record. Choosing method 3 or 4 is not permitted if the basis for choosing 3 or 4 is because the nondestructive examination (NDE) units are not functional.

1. Visual inspection (opening the container)
2. NDE
3. Nondestructive assay (NDA)
4. Dose rate profile.

Refer to Section 2.2.5 for quality control pertaining to physical screening.

2.2.2.2 Physical Screening Frequency. Physical screening frequency is 5 percent for onsite generating units, applied per waste stream per subcontractor per year. For offsite generators, the minimum physical screening frequency is 10 percent per waste stream per generator per year. The CWC operating organization adjusts the physical screening frequency for generators based on objective performance criteria (refer to Section 1.1.1.3.1).

In the event that one of the containers in the original sample set fails, a second sample set of equal size, or a minimum of three additional containers, is selected from the shipment. First and second sample sets are selected using the rationale described in the pre-shipment review section (Section 2.1). A second failure in either the first or the second sample set constitutes failure of the shipment. If the second sample set passes the inspection the single failed container is considered an anomaly and the remainder of the shipment passes verification. All failed containers and shipments are dispositioned via the PES.

2.2.2.3 Physical Screening Exceptions. The following exceptions to the physical screening process outlined previously have been developed.

- Shielded, classified, and remote-handled mixed wastes are not required to be physically screened; however, the CWC operating organization must perform a more rigorous documentation review and obtain the raw data used to characterize the waste (<1 percent of current waste receipts). Ecology will be notified and have the opportunity to review information on these wastes before shipment. For classified waste, it is necessary to have an appropriate U.S. Department of Energy security clearance and a need to know the information as defined by the classifying organization or agency.

- Waste that physically cannot be screened at CWC or associated screening facility must be physically screened at the generator location (e.g., large components, containers that can not be opened, are greater than 20 mrem per hour, contain greater than 10 nanocuries per gram of transuranic radionuclides, or will not fit into the NDE unit). Physical screening at the generator location consists of observing the packaging of the waste. If no location can be found to perform the physical screening, no screening is required.

- Waste that is packaged by the TSD unit authorized independent agent are considered to have met the physical screening requirements denoted in this WAP [e.g., CWC operating organization packaged waste that is transferred to Waste Management Federal Services of Hanford, Inc. managed TSD units or Pacific Northwest National Laboratory (PNNL) packaged waste that is transferred to PNNL operated TSD units]. On closure of the container, tamper-resistant seals must be applied to ensure the integrity of the contents.

2.2.3 Chemical Screening Process

Chemical screening is considered an additional verification element. This section describes methods, frequency, and exceptions for chemical screening. Chemical screening could be performed before the waste is shipped to CWC. When screening is performed at a location not within the Solid Waste Project, tamper-resistant seals are applied to each outer container examined.

Selection and interpretation of chemical screening methods is conducted by qualified personnel. Unless otherwise noted, tests are qualitative, not quantitative. The objective of screening is to obtain reasonable assurance that the waste is generally consistent with the description in the shipping documentation. The following tests are selected depending on the waste matrix and the applicability of the method. A minimum of three listed screening tests, including pH screening, are conducted on each sample. If less than five of the following methods are selected, the rationale is recorded by the qualified analyst.

- pH
- HOC (chlor-n-oil/water/soil)
- Headspace testing (e.g., lower explosive limit, portable gas chromatograph, flame ionization detector, photoionization detector. Instrument must be appropriate for conditions)
- Peroxide
- Polychlorinated biphenyl (PCB)
- Oxidizer
- Sulfide
- Cyanide
- Paint filter
- Water reactivity.

Refer to Section 2.2.5 for quality control pertaining to chemical screening.

2.2.3.1 Chemical Screening Frequency. At a minimum, 10 percent of the mixed waste containers verified by physical screening (Section 2.2.2.2) must be screened chemically. Although grab samples are acceptable, the CWC operating organization obtains a representative sample.

Small containers of waste (labpacks), not otherwise identified in the exceptions, packaged in accordance with 40 CFR 264.316, 40 CFR 265.316, and WAC 173-303-161 are screened chemically in accordance with waste stream's chemical screening frequency as determined by PES (Section 1.1.1.3). Inner containers are segregated by physical appearance. At least one container from each group (or three containers if all are similar) are screened chemically.

2.2.3.2 Chemical Screening Exceptions. There are cases in which chemical screening is not required. The exceptions are as follows:

- Small containers of waste in overpacked containers (labpacks) packaged in accordance with WAC 173-303-161 and not prohibited under LDR specified in WAC 173-303-140
- Waste exempted from the physical screening requirements (Section 2.2.2.3) is exempted from chemical screening
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products)
- Chemical containing equipment removed from service, (e.g., ballasts, batteries, etc.)
- Waste containing asbestos
- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided)
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes
- Hazardous debris as defined in WAC 173-303-040
- Other special-case could be exempted on a case-by-case basis with prior approval by Ecology.

2.2.4 Sampling for Confirmation Screening

Sampling methods will be performed in accordance with WAC 173-303-110(2), with the following exceptions. At all times, a best effort is employed to obtain a representative sample. When a representative sample cannot be obtained, selective sampling is performed at a location in the matrix that visually appears to have the greatest potential for dangerous constituent contamination. The chemical screening methods described in Section 3.0 do not require any sample preservation methods because the screening tests are performed at the time and location of sampling, or as soon as possible thereafter. During the interim period, the samples are stored in a manner that maintains chain of custody and protects the sample composition.

2.2.5 Quality Assurance and Quality Control for Confirmation Process

The following QA and quality control (QC) elements are used by the CWC operating organization to ensure confirmation activities provide sufficient data to provide an indication that waste received is as described in the shipping documentation.

2.2.5.1 Physical Screening Quality Control. If NDE is used to meet the physical screening requirements, 5 percent per year of the containers that have been nondestructively examined are opened to ensure the method is providing accurate data. Containers opened for other reasons, such as chemical screening or to investigate inconsistencies, could be used to meet this requirement. This requirement is based on the total number of containers reviewed, not on a shipment or general waste stream basis. The CWC operating organization is required, at a minimum, to meet this requirement over a running 3-month average with a minimum of one container being opened for every month NDE is operated. If the evaluation of NDE shows that a false negative has occurred, a review of the NDE operation is required to determine if the false negative was due to operator error, equipment malfunction, or equipment limitations. Based on the review, corrective actions are required to be implemented before further use of NDE as a physical screening tool.

2.2.5.2 Chemical Screening Quality Control. The following QC elements are used when performing chemical screening parameters.

- Using appropriate sample containers and equipment. New disposable sampling equipment is used whenever possible.

- Using field QA/QC samples.

  - 5 percent of the total number of field samples taken are field blanks and field replicates. The percentage is calculated over a running 12-month period.

  - Field blanks--Field blanks refer to an artificial sample designed to monitor the introduction of artifacts into the sample preparation and analysis process. Typically reagent water is used as a blank matrix. A universal blank matrix however does not exist for solid samples. Results of the field blank analyses checks the water and reagents used for field screening.

  - Field replicates--Field replicates are defined as independent samples collected in such a manner that the samples are equally representative. For confirmation purposes, the field replicate is tested in the field for the same parameters for which the original sample was tested. If the field replicates do not agree, an additional two samples are tested. If the second duplicate pair of samples do not agree, all reagents for the test are checked and the test is not used until corrective action is taken. Replicates are run on an as-needed-basis to meet the requirement stated in this section.

- Equipment Checks

  Test kit reagents are checked regularly as recommended by the manufacturer. Field instrumentation have current calibrations, and reagents that are past their expiration dates, if applicable, are not used.

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3.0 SELECTING WASTE ANALYSIS PARAMETERS

Analytical screening parameters that could be used for waste received at the CWC for confirmation purposes, waste designation requirements, and LDR requirements are discussed in the following sections.

3.1 PHYSICAL SCREENING PARAMETERS

The following methods could be used to perform physical screening. These methods are listed in order of preference. If a method other than 1 or 2 is used, the reasoning behind the method selection will be documented.

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

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

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

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

(2) NDE:

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying shipment documentation. This method also is subject to the QA checks listed in Section 2.2.5.1. Containers that are not easily amenable to visual inspection due to physical or radiological content, or facility availability, can be safely and economically examined.

Method: The container is scanned with a NDE system. Data are observed on a video monitor and captured on video tape. Personnel experienced with the interpretation of NDE imagery record their observations. These observations are compared to the contents listed on the shipping documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles listed in Section1.2; (c) image data not consistent with the applicable waste stream profile; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(3) NDA:

Rationale. This method is available for obtaining data that can be compared with accompanying shipping documentation for consistency on containers that cannot be opened for visual inspection, and cannot be examined by NDE (e.g., high container dose rate, shielding.) The reason for selection of this method is documented.

Method. Radioactive waste is assayed in one or both of two different assay systems. The assay systems include gamma energy analysis (GEA) and imaging passive/active neutron (IPAN). Gamma emitting radionuclides are detected in the GEA assay system. This instrument determines the type and quantity of radionuclides based on their gamma energy spectrum. The IPAN uses passive and active neutron detection to determine the presence of fissionable radionuclides. Passive detection results are equated with Pu-240 and active detection results are equated with Pu-239. The curie amount of low energy gamma emitting radionuclides, other fissile and non-fissile alpha emitting radionuclides, and beta emitting radionuclides are calculated from the GEA and IPAN data and the generator supplied radionuclide information. Radionuclide ratios are calculated by dividing the activity of each radionuclide reported by the activity of the most prominent radionuclide.

Failure criteria. A container fails the assay if the difference between the reported radionuclide ratios and the measured ratios and the reported and measured curie amounts exceed 50 percent. The failure criteria are adjusted based on the density of the waste and the amount of fissionable material present.

(4) Dose rate profile:

Rationale. This method is used to obtain data that can be compared for consistency with the shipment documentation for a container. This method is used only when the previous three methods cannot be performed for technological or ALARA reasons (e.g., container size, weight, shielding, dose rate). The reason for selection of this method is documented.

Method. A portable dose rate meter is used to determine the contact dose rate at six evenly distributed points on the exterior of the waste package. The six readings obtained are recorded and averaged. The average reading is compared with the container contact dose rate recorded on the shipment documentation.

Failure criteria. If the average dose rate observed during the dose rate profile examination differs from that recorded on the shipping documentation by more than 100 percent, the container fails.

3.2 CHEMICAL SCREENING PARAMETERS

The following methods could be used to perform chemical screening.

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

Rationale: To determine the potential ignitability and the presence or absence of volatile organic compounds in waste, and to ensure personnel adequately are protected. This method is used when containers are opened for inspection. This method can be applied to any matrix.

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

Tolerance: High organic vapor readings in matrices not documented as having volatile organic content constitutes failure.

(2) Peroxide screening:

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

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

Tolerance: Peroxide concentrations greater than 20 parts per million in liquid waste constituents that are known organic peroxide formers not documented as having been stabilized constitutes failure.

(3) Paint filter liquids test:

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

Method: To a standard paint filter, 100 cubic centimeters or 100 grams of waste are added and allowed to settle for 5 minutes. Any liquid passing through the filter signifies failure of the test.

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

(4) pH screen:

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

Method: Full range pH paper is used for the initial screening. If the initial screen indicates a pH below 4 or above 10, a pH meter could be used, or a narrow range pH paper. Solids are mixed with an equal weight of water and the liquid portion of the solution is tested. The extractant of the sample is placed on the pH paper and not dipped into the sample.

Tolerance: pH paper for this test has a sensitivity of +/-1.0 pH units. If the pH of a matrix appears to exceed regulatory limits (<2.0 or >12.5) in waste not documented as being regulated for this property, the container fails the test.

(5) Oxidizer screen:

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

Method: Acidified potassium iodide (KI) test paper is applied to solid or liquid waste. A darkening of the paper is a positive indication.

Tolerance: This method is very sensitive to oxidizing properties. A positive indication in a waste that can not be explained by documented constituents constitutes failure.

(6) Water reactivity screen:

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

Method: Water is added to a sample of solid or liquid waste. The solution is observed for evidence or fuming, bubbling, spattering, or temperature change. These reactions are considered to be positive evidence that the waste is water reactive.

Tolerance: A positive indication in a waste that cannot be explained by documented constituents constitutes a failure.

(7) Cyanide screen:

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

Method: To a test tube or watch dish containing approximately 2 milligrams of sample, an equal amount of freshly prepared ferrous ammonium citrate is added. 3 Normal hydrochloric acid is used to reduce the pH of the solution to near 2.0. A deep blue color indicates the presence of cyanide.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(8) Sulfide screen:

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

Method: Approximately 2 milligrams of sample is added to a watch dish or test tube and enough 3 Normal hydrochloric acid is added to bring the pH down to near 2.0. A sulfide test strip is placed in the solution. If the paper turns brown or silvery black, the presence of sulfides in the sample is indicated.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(9) HOC screen:

Rationale: To indicate whether PCBs or other chlorinated solvents are present in the waste. This information is used to ensure safe segregation and storage of incompatible waste, to confirm consistency with the shipping documentation, and to determine if the waste needs to be managed in accordance with the regulations prescribed in the *Toxic Substance Control Act of 1976*.

Methods: Field organic chlorine tests appropriate to the matrix, such as those offered by the Dexsil Corporation (e.g. Chlor-N-Oil, Chlor-N-Soil) are used. These screening tests are available with several detection limits. At a minimum, the 50 parts per million test is performed on oily matrices.

Tolerance: A positive indication of chlorinated organics in a waste not documented as having chlorinated organic content constitutes failure.

3.3 OTHER SAMPLE AND ANALYSIS PARAMETERS

Sampling and analysis parameters used to meet LDR requirements for waste stored and treated at CWC are detailed in Attachment A. Refer to Attachment A for parameters, methods, and rationale.

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4.0 SELECTING SAMPLING PROCESSES FOR DESIGNATION

Specific sampling procedures and techniques depend on both the nature of the material and the type of packaging. This section describes the sampling methodology used to obtain representative samples.

4.1 SAMPLING STRATEGIES

Table 4-1 contains waste forms and sample equipment used to sample referenced waste. Sampling of these waste forms is performed in accordance with Table 4-1.

4.2 SAMPLING METHODS

The appropriate personnel are responsible for arranging all sampling and laboratory support for sample analysis. Samples are processed at one of several laboratories qualified to perform analysis of waste samples (refer to Section 5.0). Sampling methods are those described in WAC 173-303 110(2).

The basic sampling sequence is as follows:

- Obtain a unique sample number and complete the sample tag before sampling
- Obtain a precleaned sampler and sample bottles
- Attach sample label to sample bottles
- For sampling liquid waste, a sampler or pipet will be used to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative
- Fill sample containers in the following sequence: volatile organics, semivolatile organics, metals, ignitability, pH (corrosivity)
- For solid waste, wipe the exterior surfaces of the sample bottles with a dry rag
- Attach sample labels to outer plastic bags
- Place samples in an appropriate receptacle for transfer to the laboratory
- Complete the chain-of-custody forms
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1)
- Transfer receptacle to the analytical laboratory as appropriate to meet sample holding times

- Properly clean and decontaminate nondisposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

4.3 SELECTING SAMPLING EQUIPMENT

Sampling equipment selection is detailed in Table 4-1. Sampling equipment needed to sample waste is maintained and decontaminated as necessary by the CWC operating organization.

4.4 SAMPLE PRESERVATION

Sample preservation follows SW-846 protocol or other approved sample preservation method for waste in accordance with 62 FR 62079.

4.5 ESTABLISHING QUALITY AND QUALITY CONTROL FOR SAMPLING

The sampling team ensures all samples are labeled with a unique identifier.

Sample collectors prepare a permanent log of sampling activities. Log entries include as appropriate: date of collection, time of collection, location, batch number, sample number, tank number, copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature. These logs entries are made by the appropriate personnel while the sampling is performed. The logs or copies of logs are maintained by the appropriate personnel after completion of sampling activities.

A chain-of-custody record accompanies samples at all times. The record contains a unique sample number for each sample, date and time of collection, sample type, sample location, methods of transfer, and signatures (or electronic equivalent, e.g., signature password) of the collector and all subsequent custodians.

During all sampling activities, strict compliance with applicable industrial hygiene and safety standards is mandatory. If samplers accidentally contact waste material and sampling personnel, decontamination of sampling personnel is performed immediately. Transportation of samples is performed in accordance with all applicable Hanford Site and U.S. Department of Transportation requirements.

The following QA/QC elements are used by the CWC operating organization to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined by WAC 173-303-110(2), 40 CFR 261 Appendix I, and/or SW-846 Chapter 9

- Appropriate sample containers and equipment

- Samples numbered

- Traceable labeling system
- Field QA/QC samples (applicable sampling and analysis plan)
- Equipment calibration (current as appropriate)
- Chain of custody.

Table 4-1. Central Waste Complex Chemical Screening Sampling Equipment.

Waste form	Reference in SW-846	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, SW-846, Chapter 9, glass thief or pipet
Solidified liquids	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Sludges	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Soils	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
Absorbents	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Ion exchange resins	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels

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

5.0 SELECTING A LABORATORY, LABORATORY TESTING, AND ANALYTICAL METHODS

The following sections discuss selecting a laboratory for analyzing samples for QA/QC elements.

5.1 SELECTING A LABORATORY

The following laboratory QA/QC requirements apply to laboratory analyses of generator waste.

- The daily quality of analytical data generated in contracted analytical laboratories is controlled by the implementation of an analytical laboratory QA plan.

- Before commencement of the contract for analytical work, the laboratory submits their QA plan for approval. At a minimum, the plan documents the following:
  - Sample custody and management practices
  - Sample preparation and analytical methods
  - Instrument maintenance and calibration methods
  - Internal QA/QC measures, including the use of method blanks
  - Sample preservatives used
  - Analyses requested.

When required, replicate testing usually is accomplished by analyzing two samples, one by the generator and another by the CWC operating organization.

5.2 SELECTING TESTING AND ANALYTICAL METHODS

CWC identifies the type of testing and analytical method to be used at the laboratory (e.g., for metals analysis, the type of determination method will be stated, such as inductively coupled plasma metals by atomic absorption).

CWC identifies the decision level necessary for each analytical parameter. If the decision level is found in a regulation, the generator references the regulation.

6.0 SELECTING WASTE RE-EVALUATION FREQUENCIES

The re-evaluation (repeat and review) frequency to review profile information is yearly, or more often if the waste generation process changes.

CWC re-evaluates a waste profile if:

- A generator notifies CWC operating organization that the generating process has changed

- Inspection or analysis indicates that the waste received at CWC does not match the profile and/or shipping documentation.

When a waste profile is re-evaluated, the CWC operating organization could request the generator to do one of the following:

- Verify the current waste profile is accurate
- Supply a new waste profile
- Submit a sample for parameter analysis.

7.0 SPECIAL PROCEDURAL REQUIREMENTS

This section discusses any special process requirements for receiving mixed waste at CWC.

7.1 PROCEDURES FOR RECEIVING WASTE GENERATED ONSITE

In general, mixed waste received from onsite generator units is managed the same as waste received from offsite generators. Differences include, but not limited to, verification rates, shipping documentation, and LDR requirements.

7.2 PROCEDURES FOR RECEIVING WASTE GENERATED OFFSITE

Waste received from offsite is handled in the same manner as mixed waste received from onsite except as denoted in Section 7.1.

7.3 PROCEDURES FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE

CWC accepts ignitable, reactive, or incompatible waste (refer to Section 1.2). The following precautions are taken before ignitable, reactive, or incompatible waste is accepted at CWC.

- Pre-shipment review and/or chemical screening identifies whether the waste is ignitable, reactive, or incompatible.

- CWC waste acceptance criteria identifies storage requirements for ignitable, reactive, and incompatible waste, ensuring the waste is stored in a safe manner.

The types of prohibited waste not accepted at CWC are listed in Section 1.2.

7.4 PROVISIONS FOR COMPLYING WITH FEDERAL AND STATE LAND DISPOSAL RESTRICTION REQUIREMENTS

Although CWC does not treat LDR waste, sampling could be performed at CWC to support LDR certification. The following sections are required for treatment of LDR waste.

State-only and federal LDR requirements restrict the land disposal of certain types of waste subject to *Resource Conservation and Recovery Act* (RCRA) *of 1976* and the *Hazardous Waste Management Act*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268 and WAC 173-303-140. Waste constituents that are subject to LDRs are identified in 40 CFR 268.40 and referenced by WAC 173-303-140. Waste must meet certain treatment standards, as specified in 40 CFR 268.40 and WAC 173-303-140, if the waste is to be land disposed.

Generators (as defined in the regulation and not per Section 1.1.1.1) determine if LDRs apply to the waste based on knowledge or testing [40 CFR 268.7(a)]. Each waste is analyzed for those LDR constituents contained in the listed and characteristic waste numbers identified by the generator, if the generator's knowledge is not sufficient to make a determination. If the LDR waste does not meet the applicable treatment standards, the generator (Section 1.1.1.1) provides with each shipment of waste information stating so, in accordance with WAC 173-303-380(1)(j)(k)(n) or (o). If the waste meets the standards, the generator must send a certification that the waste meets the treatment standards.

7.4.1 Waste Treatment

Retrieved and newly generated waste is treated to meet LDR as specified in 40 CFR 268.40 and WAC 173-303-140 with the exception of transuranic mixed waste. Transuranic mixed waste is treated to the applicable standards required by Waste Isolation Pilot Plant or other generator requirements. An onsite TSD unit potentially can pretreat certain waste before shipment to a permitted offsite facility that could perform full treatment of the specific waste to meet full LDR. Waste requiring treatment other than what an onsite TSD unit can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment.

LDR requirements apply to all mixed waste except a small class of state-only waste. When evaluating the treatability of certain characteristic waste, consideration must be given to any additional underlying hazardous constituents that might be found in the waste. The treatment standards, for the most part, are concentration-based. If the constituent concentrations for the waste fall below those specified in 40 CFR 268.40 and/or 268.48 for underlying hazardous constituents and in WAC 173-303-140, the waste can be land disposed without being treated. If the concentrations exceed these limits, the waste must be treated before disposal.

Specific treatments performed onsite include, but are not limited to, deactivation, encapsulation, stabilization, and amalgamation.

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

- Neutralization is the primary method of treatment for corrosive waste that has a pH ≤ 2 and/or ≥ 12.5. Examples of bases that could be used as neutralizing agents include sodium hydroxide, calcium hydroxide, or calcium carbonate. Examples of acids that could be used to neutralize bases are hydrochloric acid and sulfuric acid.

- Absorption is the primary method of treatment for ignitable waste, which include waste that is liquid and has a low total organic carbon content (<10 percent). Absorbent material that could be used includes polyacrylates, polypropylene, polymer type, superabsorbent polymer, cellulose, or other absorbent materials meeting various disposal requirements.

- Cementing or grouting is the primary method of treatment for ignitables consisting of metal fines or other corrosive materials. These types of waste are deactivated by mixing and binding it with an inert cementacious material.

- Controlled reaction with water is the primary method of treatment for reactive materials such as sodium metal. This process will deactivate the material and allow for further disposition.

- Macroencapsulation with polyethylene plastic containers is the primary treatment for debris. For elemental lead, macroencapsulation is performed in accordance with Table 1 of 40 CFR 268.42.

Stabilization methods used include cementing or grouting, sealing, and absorption. Particulates and/or liquid waste containing hazardous constituents could be cemented or grouted to meet either RCRA LDR, Waste Isolation Pilot Plant waste acceptance criteria, and/or the disposal criteria of future TSD units. These types of waste are stabilized by mixing and binding the waste with an inert material. The inert material generally used is Portland cement. When dealing with some waste streams such as sludges that might contain an inconsistent or excess liquid content, absorbent could be added to the waste to provide a drier matrix to allow identification of the proper combination of ingredients to ensure a successful stabilization effort.

Amalgamation of liquid elemental mercury (D009) is achieved using inorganic reagents such as copper, zinc, nickel, gold, and sulfur. The resultant matrix is a nonliquid, solid, or semi-solid visually inspected to verify compliance.

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

7.4.2 Sampling and Analytical Methods

If waste is sampled and analyzed to demonstrate an LDR has been met, only U.S. Environmental Protection Agency or equivalent methods are used. Waste is analyzed using the methods outlined in 40 CFR 268.40 and WAC 173-303-140(4)(b) or any other reliable method allowed by regulations.

Samples of waste are transferred to the sample management area for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected and analyzed in accordance with SW-846 or any other method allowed by regulations. Storage is provided for waste containers while waiting for laboratory analysis results.

7.4.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and sample results (if applicable per 40 CFR 268.40 and WAC 173-303-140) have verified the LDR treatment is successful, certification of the LDR treatment is required. The certification statement is prepared by the onsite TSD unit in accordance with 40 CFR 268.7.

Where a LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 and WAC 173-303-140, or exceeds the application prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, this information is placed in the CWC operating record, in accordance with WAC 173-303-380(1)(k) and (o).

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8.0 RECORDKEEPING

Recordkeeping requirements that are applicable to this WAP are described in Chapter 12.0, Table 12-1, *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28) and within this WAP.

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9.0 REFERENCES

DOE/RL-91-17, *Hanford Facility Dangerous Waste Permit Application, Central Waste Complex*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, revised periodically.

EPA SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

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

62 FR 62079, *Mixed Waste Testing Guidance*, November 20, 1997.

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APPENDIX A

ANALYTICAL PARAMETERS, METHODS, AND RATIONALE FOR WASTE RECEIVED AT CENTRAL WASTE COMPLEX

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Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex (sheet 1 of 4)

Parameter		Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
General chemistry					
Flashpoint		1010/1020	Liquid	To provide documentation for safe storage conditions	To determine regulatory status as D001 waste, to provide proper waste designation and applicability of LDR requirements
pH	Liquid	9040	Liquid, sludge	To indicate the degree of corrosivity for safe handling; to provide for proper waste designation; and to identify waste that might compromise container integrity	To determine regulatory status as D002 waste, to provide proper waste designation, applicability of LDR requirements and state-only requirements.
	Solid	9045c	Solid		
Hydroxide		9040	Liquid	To provide documentation for safe treatment and storage conditions; and to comply with CWC waste acceptance criteria.	To provide proper waste designation and applicability of LDR requirements.
Water reactivity		Field method	Liquid, sludge	To determine whether the waste has a potential to violently react with water to form gases or generate heat; to provide documentation for safe treatment and/or storage conditions for waste designation; and to comply with CWC waste acceptance criteria.	To provide proper waste designation; safe storage and management.
Free liquids		9095A	Liquid, sludge, solid	To determine applicability of LDRs and for characterization of appropriate treatment	To determine appropriate state-only LDR status of the waste.
Cyanide		9010B/9012A	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex (sheet 2 of 4)

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Sulfide	9030B	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Organic analyses				
PCBs	8081A/8082	Liquid, sludge, solid	To determine proper waste designation for management of waste in accordance with the *Toxic Substance Control Act of 1976 (TSCA)* and WAC 173-303.	To provide proper waste designation and to meet TSCA and LDR requirements.
Total organic carbon	9060	Liquid, sludge, solid	To determine applicability of LDR and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements, to meet LDR requirements, and comply with CWC waste acceptance criteria.
Total organic halides	9020B/9021/9022	Liquid, sludge	To determine proper waste designation and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements.
Persistent constituents	9075/9076/9077/ 9211/9212/9214/ 9250/9251/9253			
Total suspended solids	160.2[b]	Liquid, sludge	To determine applicability of LDR and status as a wastewater	To provide applicability of LDR and status as a wastewater.
Volatile organic compounds	1311/8260B	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex (sheet 3 of 4)

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Semivolatile organic compounds	1311/8270A	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Chlorinated herbicides	8151A	Liquid	Not applicable	To provide proper waste designation and applicability to state-only requirements.
Inorganic analyses				
Arsenic	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Barium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Cadmium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Chromium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Lead	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex (sheet 4 of 4)

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Mercury	1311/7470	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Silver	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Selenium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Nickel	6010	Liquid, sludge, solid	To determine applicability of LDRs, and for characterization of appropriate treatment.	To meet LDR requirements.

[a] EPA SW-846, unless otherwise noted.
[b] EPA-600/4-7-020, unless otherwise noted.
LDR = land disposal restriction.
PCB = polychlorinated biphenyls.

H 020080543	001	1/1	R03	0272WA	0110	08/95	*
H 020080545	001		R02	0272WA	0801	09/91	*
H 020080545	002		C01	0272WA	0801	08/91	*
H 020080580	001	1/1	R04	0200W	0110	02/93	*
H 020080580	002		R03	0200W	0901	09/91	*
H 020080605	001		R002	2402W	0800	09/91	*
H 020080606	001	1/1	R02	2402W	0801	05/93	*
H 020080606	002	1/1	R01	2402W	0801	05/93	*
H 020080739	001	1/1	R02	2402W	0800	02/93	*
H 020080901	001	1/1	C02	2403WD	0900	11/93	*
H 020080901	002	1/1	C02	2403WD	0900	11/93	*
H 020131541	001	1/1	R02	2403WA	0900	06/93	*
H 020131541	002	1/1	R01	2403WA	0900	05/93	*
H 020823226	001	1/1	0	2404WA	0900	01/97	*
H 020823227	001	1/1	0	2404WC	0900	01/97	*
H 020823228	001	1/1	0	2404WA	0901	01/97	*

APPENDIX 4A

DESIGN DRAWINGS

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APPENDIX 4A

DESIGN DRAWINGS

This appendix contains the following design drawings:

Drawing number	Revision number	ECN	Description
H-2-80543	3	637393 (02/21/98) and 623646 (08/29/95)	CIVIL/ARCH/STRL/HVAC PLANS, EL, SECT & DETAILS
H-2-80545.1	2		ARCH/STRL ELEVATIONS & DETAILS (SHEET 1 OF 2)
H-2-80545.2	1		ARCH/STRL ELEVATIONS & DETAILS (SHEET 2 OF 2)
H-2-80580.1	4	623646 (09/21/95)	CIVIL STORAGE PAD PLAN, SECT & DET (SHEET 1 OF 2)
H-2-80580.2	3	623646 (09/21/95)	CIVIL STORAGE PAD SECT & DET (SHEET 2 OF 2)
H-2-80605	2	620865 (05/08/95) 623646 (09/21/95)	ARCH/STRL PLAN, EL, SECTIONS & DETAILS
H-2-80606.1	2		ARCH/STRL SECTIONS & DETAILS (SHEET 1 OF 2)
H-2-80606.2	1		ARCH/STRL SECTIONS & DETAILS (SHEET 2 OF 2)
H-2-80739	2	620864 (05/08/94)	ARCH/STRL PLAN, ELEVATIONS, SECTIONS & DET
H-2-80901.1	2	617742 (02/04/95) 605651 (01/31/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)

Drawing number	Revision number	ECN	Description
H-2-80901.2	2	617742 (02/04/95) 605651 (01/31/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
H-2-131541.1	2	615400 (10/20/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)
H-2-131541.2	1	615400 (10/20/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
H-2-823226	0		Structural Foundation Floor Plan (WC)
H-2-823227	0		Structural Foundation Floor Plan (WC)
H-2-823228	0		Structural foundation Section & Notes

IPF 10

ENGINEERING CHANGE NOTICE

1. ECN 637393

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	R.W.Whitlock, 32A40, T4-03, 373-1737	[] Yes [X] No	1/21/98
	6. Project Title/No./Work Order No. Drawing update/label assessment	7. Bldg./Sys./Fac. No. 2401W, 2402W-WL 2403 WA-WD	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) see box 13	10. Related ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes ~~[X]~~ No

1- H-2-80743 sht.1 rev.5: see pages 3 & 4.
2- H-2-80742 sht.1 rev 2: see page 5.
3- H-2-80607 sht.1 rev 3: see pages 6 & 7.
4- H-2-80544 sht.1 rev ~~3~~ 6: see pages 8, 9 & 10.
5- H-2-80543 sht.1 rev 3: see page 11.
6- H-2-131547 sht.1 rev 5: see page 12.
7- H-2-131548 sht.1 rev 2: see page 13.
8- H-2-80918 sht.1 rev 5: see page 14 & 15.
9- H-2-80919 sht.1 rev 4: see page 16.
10- H-2-80922 sht.1 rev 6: see page 17.
11- H-2-80917 sht.1 rev 5: see page 18.
12- H-2-80920 sht.1 rev 6: see page 19.

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[X]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

update drawings to match configuration found in the field.

15. Distribution (include name, MSIN, and no. of copies)

R.W. Whitlock, File T4-03 (1)
B.J. Graf T4-55 (1)

FILE T4-03

RELEASE STAMP

MAR 04 1998
DATE:
STA: 5
HANFORD RELEASE
ID: 36

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) 637393

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	~~RR Ames~~ J.R. Rosser J.R. Rosser	2/25/98	Design Agent		
Cog. Eng.	RW Whitlock R.W. Whitlock	2/23/98	PE		
Cog. Mgr.	RM Irwin R.M. Irwin	2/26/98	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		

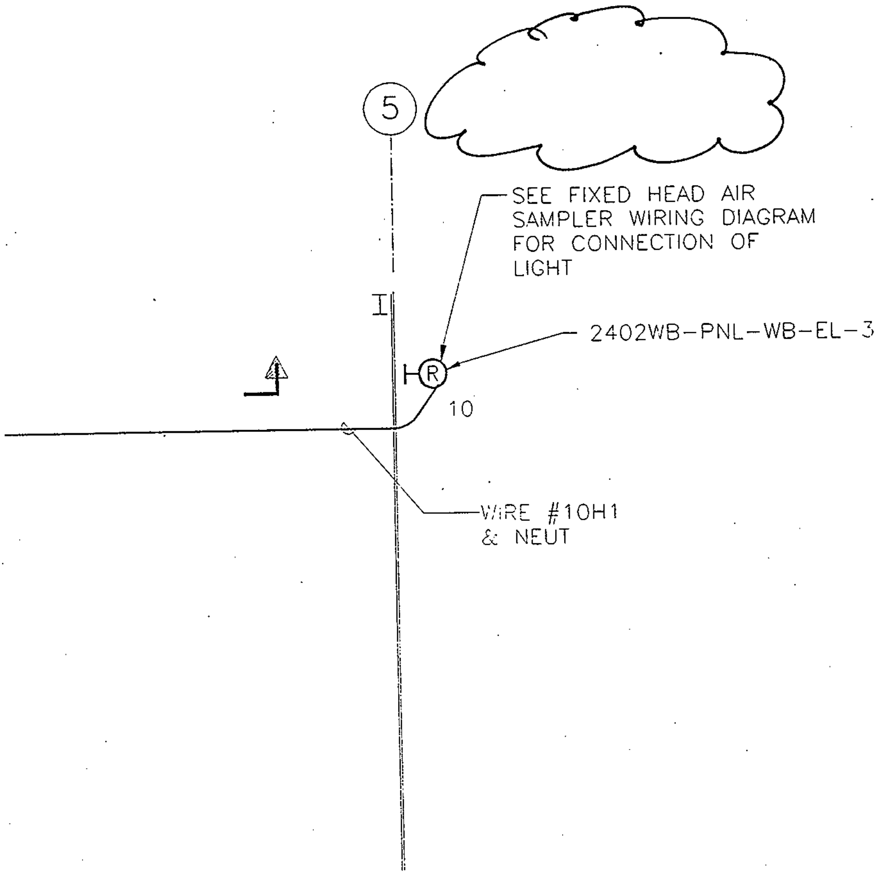
DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

H-2-80743 SH 1

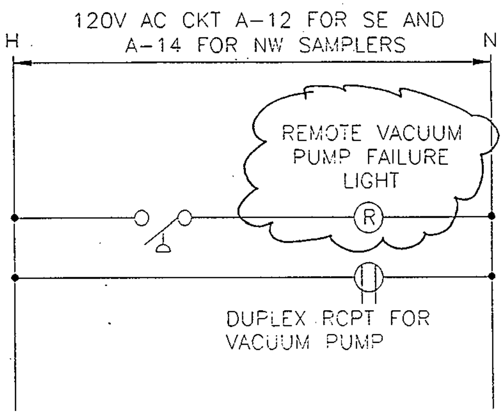
FOR 'WAS' CONDITION SEE PREVIOUS REVISION



1. ECN 637393

H-2-80743 SH 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISIO .



FIXED HEAD AIR SAMPLER

WIRING DIAGRAM REMOTE INDICATOR

H-2-80742 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REV [illegible].

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
	EXISTING CONDUIT, STRUCTURE OR EQUIPMENT
	EXPOSED CONDUIT, HATCH MARKS INDICATE QUANTITY OF NUMBER 12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2#12 CONDUCTORS
	FLEXIBLE METAL CONDUIT
—G—	GROUND CONDUCTOR
—DB—	DIRECT BURIAL CABLE
A-2,4,6	CONDUIT HOMERUN TO PANEL AND CIRCUITS AS SHOWN
3#10,3/4"C	CONDUCTOR/CONDUIT DESIGNATION, 3#10, 3/4" CONDUIT SHOWN
12	DUPLEX RECEPTACLE, 120 VOLT, 15 AMP, 2P, 3W, NEMA TYPE 5-15R. NUMBER DENOTES CIRCUIT. SURFACE MOUNT AT 4'-0" UNLESS NOTED OTHERWISE
7	DUPLEX GFI RECEPTACLE, 120 VOLT, 15 AMP, 2P, 3W, NEMA TYPE 5-15R. NUMBER DENOTES CIRCUIT. SURFACE MOUNT AT 4'-0" UNLESS NOTED OTHERWISE
	RECEPTACLE FOR CONNECTION OF CONTINUOUS AIR MONITOR TO RADIATION ALARM LIGHT
J	JUNCTION BOX
T	THERMOSTAT BACKBOX, SURFACE MOUNT AT 5'-0"
S^a	SINGLE POLE TOGGLE SWITCH, 277 VOLT, 20 AMP, LOWER CASE LETTER DENOTES CONTROLLED EQUIPMENT. SURFACE MOUNT AT 4'-6" ON EXTERIOR OF BUILDING
41 A e	FLUORESCENT LIGHTING FIXTURE, LETTER INDICATES TYPE. TYPE A, CIRCUIT 41, SWITCH e SHOWN, MOUNT AT 18'-0"
	INCANDESCENT LIGHTING FIXTURE, LETTER INDICATES TYPE, SURFACE MOUNT ON CEILING
	LOW PRESSURE SODIUM LIGHTING FIXTURE, MOUNT AT 8'-0"
H	FIXED HEAD AIR SAMPLER FAILURE INDICATING LIGHT
	EMERGENCY LIGHTING FIXTURE, NUMBER INDICATES QUANTITY OF LAMPS, ARROWS INDICATE BEAM DIRECTION, MOUNT AT 14'-0"
	EXIT LIGHTING FIXTURE, MOUNT ABOVE DOOR
	LIGHTING PANEL
M	MOTOR
	DISCONNECT SWITCH, MOUNT AT 5'-0"
	PUSHBUTTON CONTROL STATION, MOUNT AT 5'-0"

H-2-80607 SHT. 1

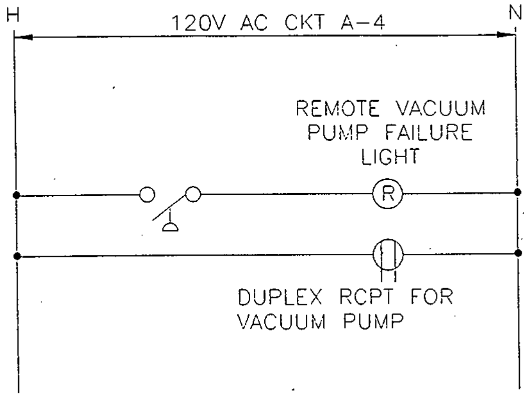
FOR 'WAS' CONDITION SEE PREVIOUS REVIS...

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION (SEE NOTE-1)
	EXPOSED CONDUIT, HATCH MARKS INDICATE QUANTITY OF #12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2 #12
A-1,3,5	HOMERUN CONDUIT (CIRCUITS 1,3, AND 5 TO PANEL "A" INDICAED)
G	GROUND CONDUCTOR NO. 6 BARE SOLID COPPER
DB	DIRECT BURIAL CABLE
J	JUNCTION BOX
	DUPLEX RECEPTACLE, MOUNT AT 48", UNLESS NOTED OTHERWISE, (CIRCUIT 4 INDICATED)
Sa	SINGLE POLE TOGGLE SWITCH, MOUNT AT 4'-6" ON EXTERIOR OF BUILDING. LOWER CASE LETTER INDICATES CONTROLLED EQUIPMENT
2a J	LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE (CIRCUIT 2, SWITCH a INDICATED), MOUNT AT 18'-0"
	INCANDESCENT LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE
H	LPS LIGHTING FIXTURE, MOUNT AT 8'-0"
R	FIXED HEAD AIR SAMPLER FAILURE INDICATING LIGHT
2	EMERGENCY LIGHTING FIXTURE, BATTERY POWERED (2 LAMPS INDICATED) ARROWS INDICATE BEAM DIRECTION, MOUNT AT 14'-0"
M	MOTOR
	LIGHTING AND POWER PANELBOARD
	EXIT SIGNS
	VACUUM SWITCH

H-2-80607 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISION.



WIRING DIAGRAM REMOTE INDICATOR

FIXED HEAD AIR SAMPLER

H-2-80544 SH 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISION.

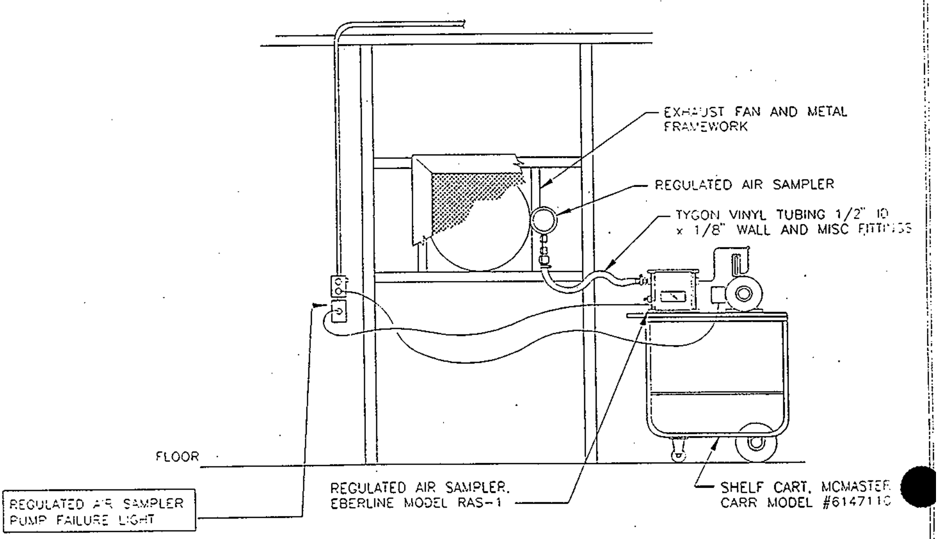
ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION (SEE NOTE-1)
	EXPOSED CONDUIT, HATCH MARKS INDICATE QUANTITY OF #12 AWG CONDUCTORS IN 1/2" CONDUIT. CONDUITS UNMARKED ARE 1/2" WITH 2 #12
A-1,3,5	HOMERUN CONDUIT (CIRCUITS 1,3, AND 5 TO PANEL "A" INDICATED)
—G—	GROUND CONDUCTOR NO. 6 BARE SOLID COPPER
—DB—	DIRECT BURIAL CABLE
	JUNCTION BOX
	DUPLEX RECEPTACLE, MOUNT AT 48", UNLESS NOTED OTHERWISE. (CIRCUIT 4 INDICATED)
	SINGLE RECEPTACLE. (SPECIAL PLUG)
Sa	SINGLE POLE TOGGLE SWITCH, MOUNT AT 4'-6" ON EXTERIOR OF BUILDING. LOWER CASE LETTER INDICATES CONTROLLED EQUIPMENT
2a	LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE (CIRCUIT 2, SWITCH a INDICATED).
	INCANDESCENT LIGHTING FIXTURE, LETTER DENOTES FIXTURE TYPE
	LPS LIGHTING FIXTURE
	FIXED HEAD AIR SAMPLER INDICATOR LIGHT
	EMERGENCY LIGHTING FIXTURE, BATTERY POWERED (2 LAMPS INDICATED) ARROWS INDICATE BEAM DIRECTION
	MOTOR
	LIGHTING AND POWER PANELBOARD
	FIRE ALARM MANUAL STATION
GAS	FLOW ALARM PRESSURE SWITCH
TS	SUPERVISORY SWITCH (TAMPERPROOF)
HLPS	PRESSURE SUPERVISORY SWITCH HIGH/LOW
LT	LOW TEMPERATURE SUPERVISORY SWITCH
EOL	END-OF-LINE DEVICE
	BURIED CABLE MARKER (SEE DETAIL D)

PANELBOARD A VOLTS 120/240V, 1PH, 3W LOCATION WEST WALL
60 AMP BUSSING ■ MAIN BRKR 50 AMP ■ SURFACE MOUNTED ☐ TOP FEED
50 AMP NEUTRAL ☐ MAIN LUGS ONLY ☐ FLUSH MOUNTED ■ BOT FEED

CKT	LOAD DESCRIPTION	VA	BRKR	BRKR	VA	LOAD DESCRIPTION	CKT
1	WEST LIGHTS	1440	20	20	1680	AIR SAMPLER RECP/BEACON RECP	2
3	EAST LIGHTS	1440	20	20	1500	BASEBOARD HEATERS	4
5	ENCL. EXT & LIGHTING	340	20	20	500	AIR COMPRESSOR	6
7	RECEPTACLES	360	20	20	830	NE EXHAUST FAN	8
9	BACKFLOW BLDG HTR	2000	20	20	480	BACKFLOW BLDG LTS & RCPT	12
15	EXH FAN-SW CORNER	360	20	—	—	SPACE	14
				—	—	SPACE	16
17	SPARE	—	—	50		SERVICE DISCONNECT	18
19	SPARE	—	—				

TOTAL CONNECTED LOAD = 10650 WATTS | REMARKS
HOT NO. 1 = 4110 VA
HOT NO. 2 = 4850 VA



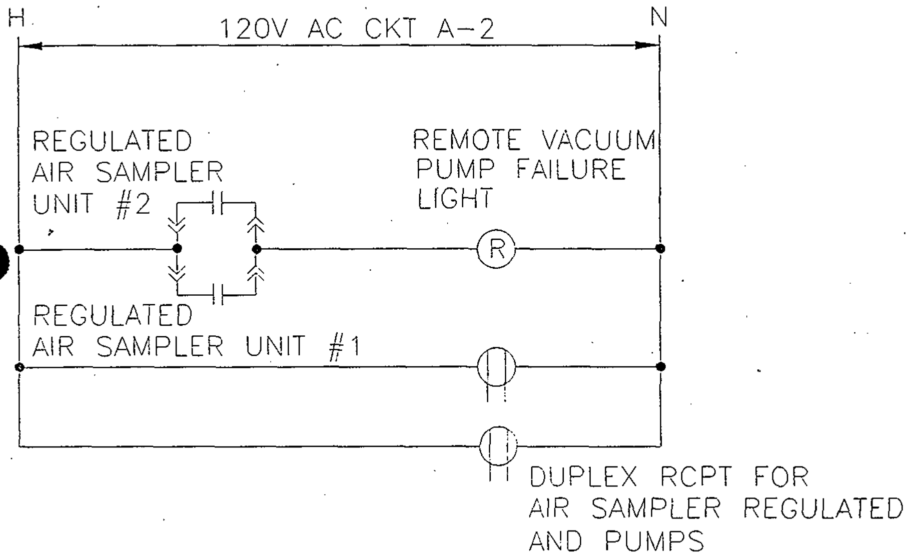
(E) FIXED HEAD AIR SAMPLER ASSEMBLY

SCALE: NONE

1. ECN 637393

H-2-80544 SH 1

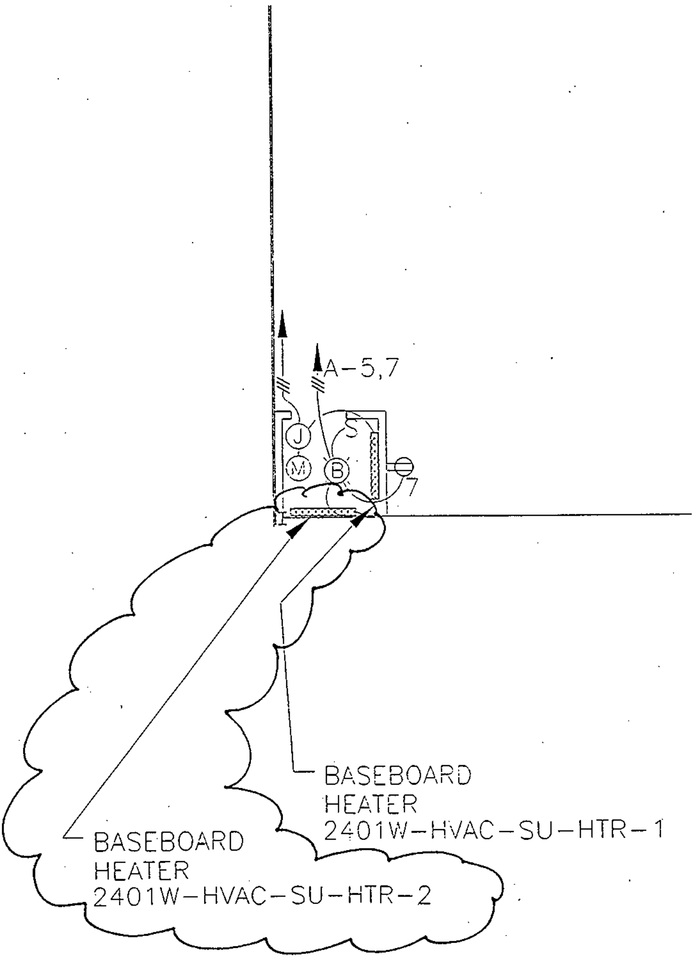
FOR 'WAS' CONDITION SEE PREVIOUS REVIS...



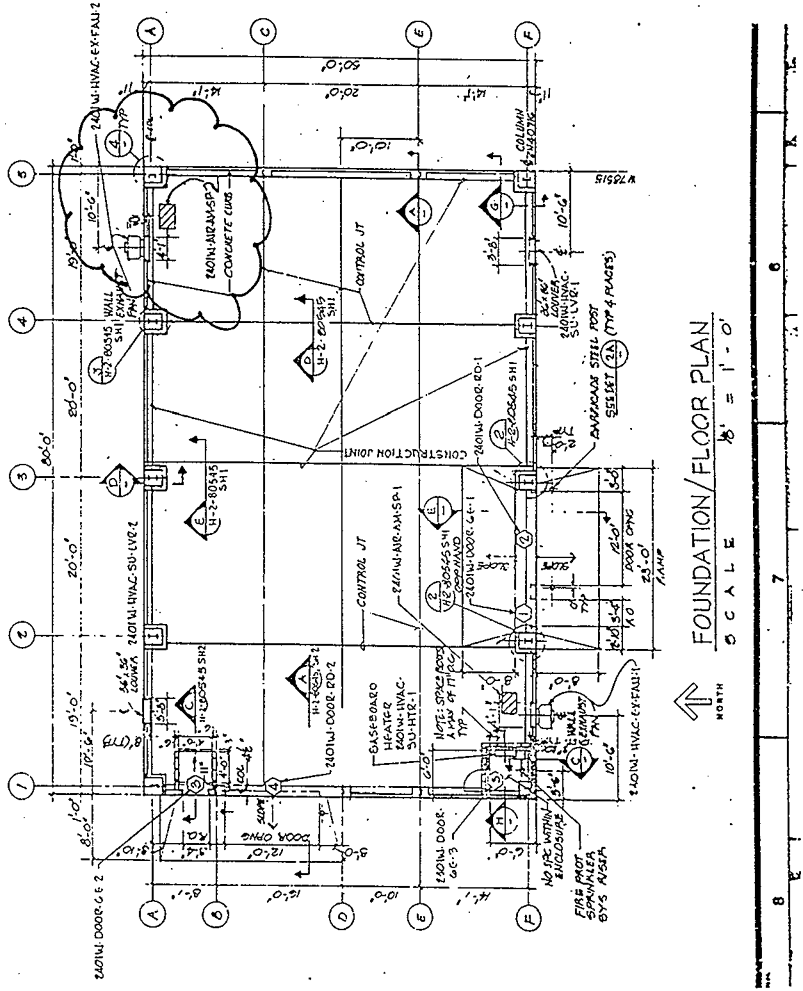
FIXED HEAD AIR SAMPLER WIRING DIAGRAM

H-2-80544 SH 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISI...



H-2-80543
ShT 1



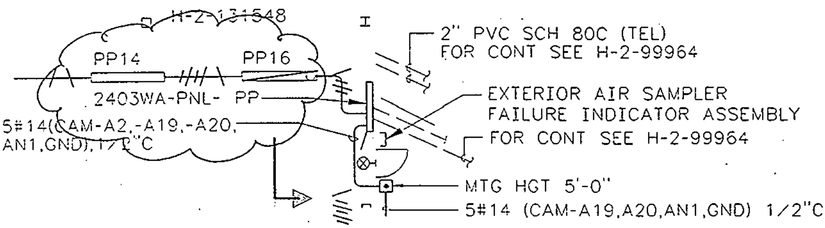
H-2-131547 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REV

ADD:

FIXED HEAD AIR SAMPLER SCHEDULE	
FHAS	LABEL
SP-1	2403WA-AIR-AM-SP-1
SP-2	2403WA-AIR-AM-SP-2
SP-3	2403WA-AIR-AM-SP-3
SP-4	2403WA-AIR-AM-SP-4

ADD:



DELETE:

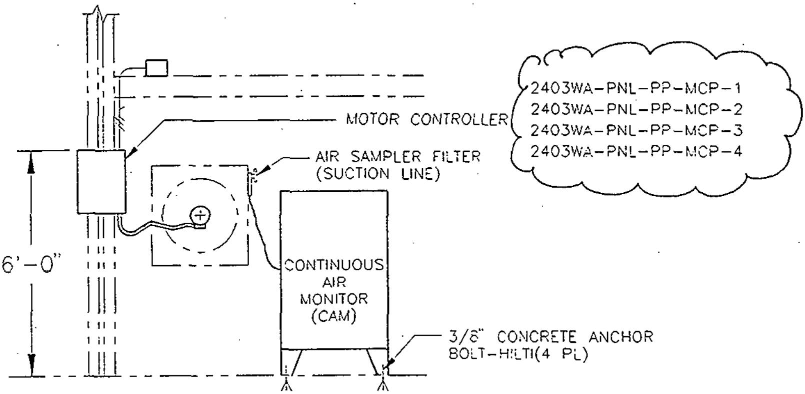
SPEAKER SCHEDULE			
NO	COL	TYPE	LABEL
1	2	SPKR	2403WA-COMM-SPKR-1
2	4	SPKR	2403WA-COMM-SPKR-2
3	6	SPKR	2403WA-COMM-SPKR-3
4	8	SPKR	2403WA-COMM-SPKR-4
5	E,9	SPKR	2403WA-COMM-SPKR-5

 | 1. ECN 637393

H-2-131548 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REVIS[illegible]

ADD:



ELEVATION – CAM 1 & CAM 2

COL 2 & 4

ELEVATION – CAM 3 & CAM 4

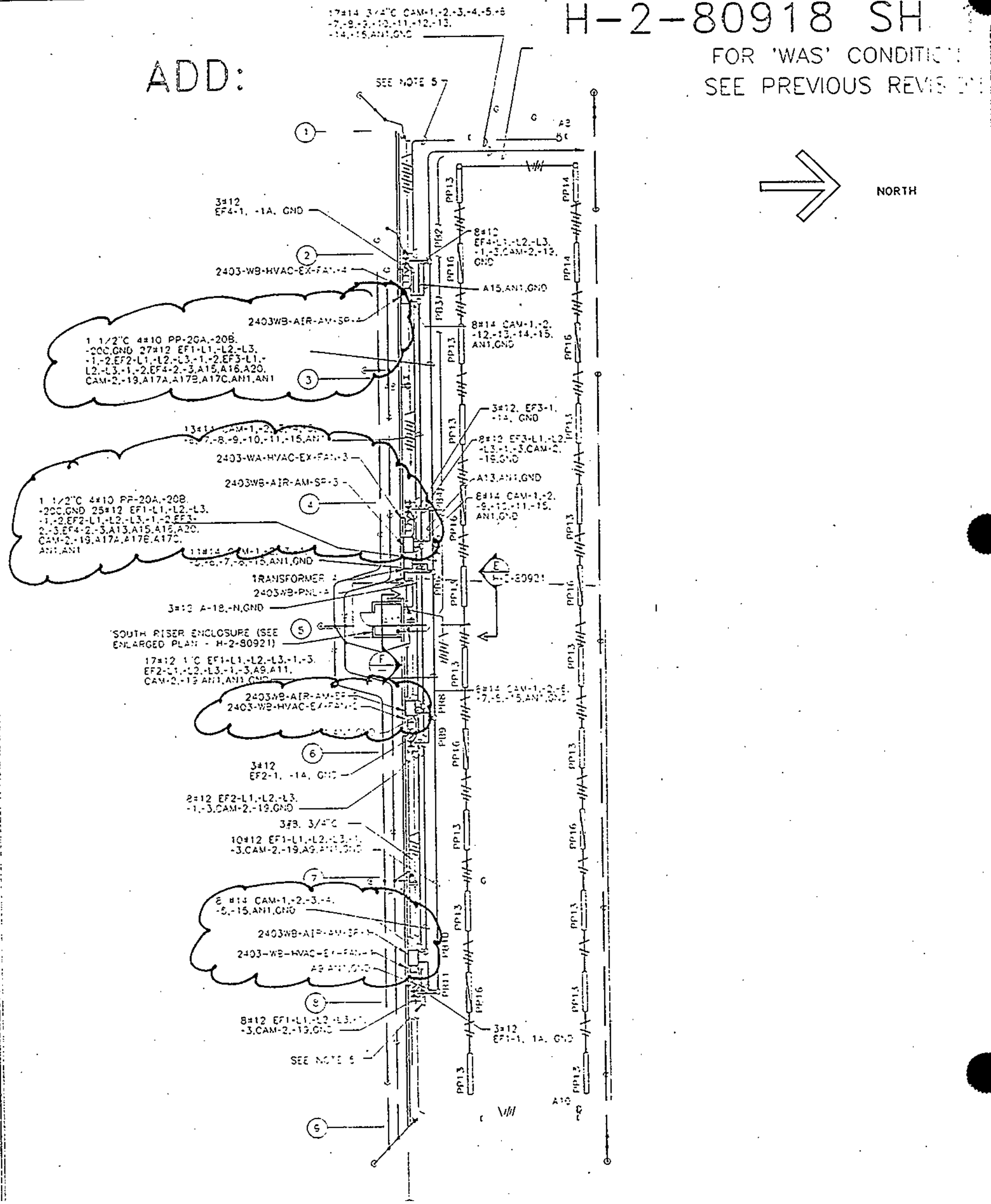
COL 6 & 8
OPPOSITE HAND

1. ECN 637393

H-2-80918 SH

FOR 'WAS' CONDITI[illegible]
SEE PREVIOUS REVIS[illegible]

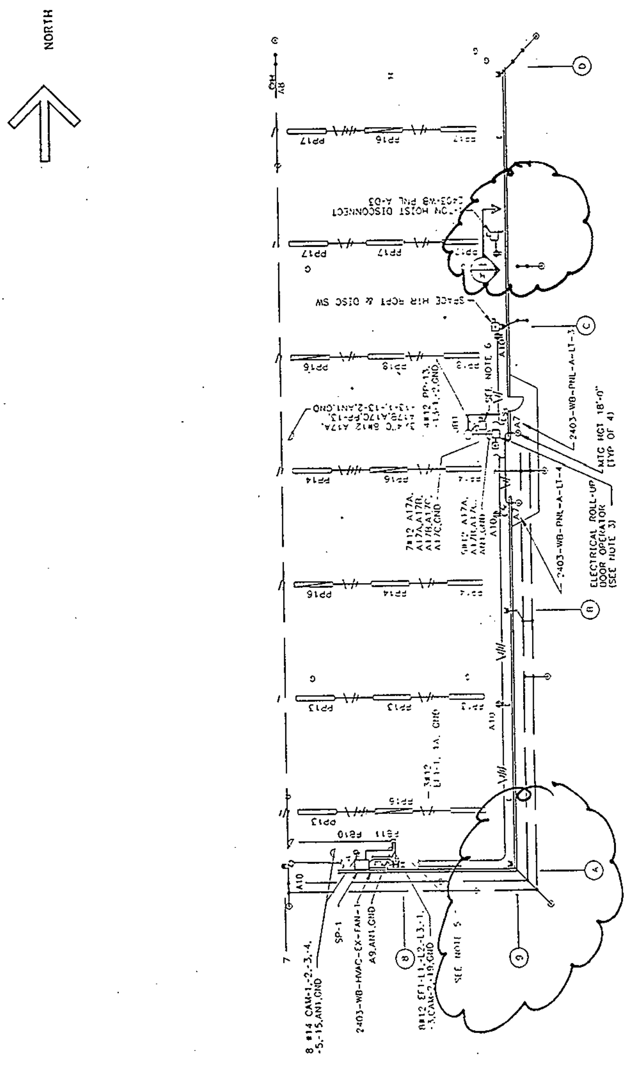
ADD:



1. ECN 637393

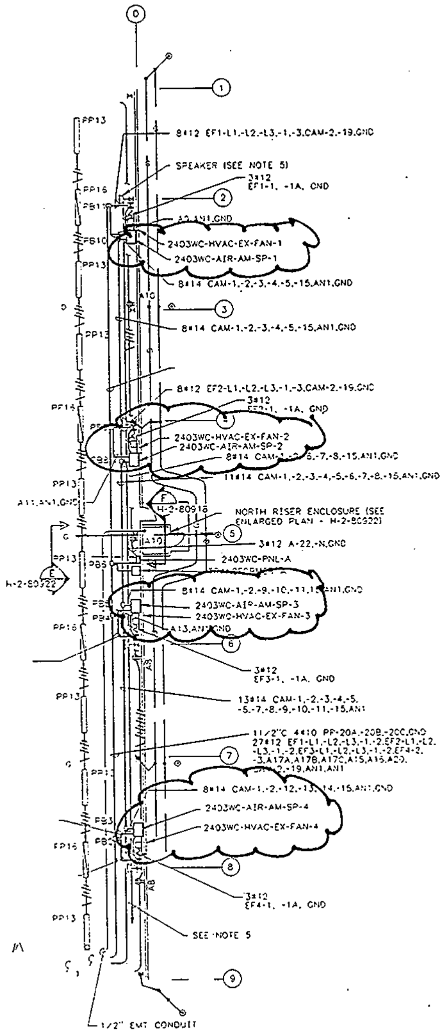
H-2-80918 SH 1

FOR 'WAS' CONDITION: SEE PREVIOUS REVISION.



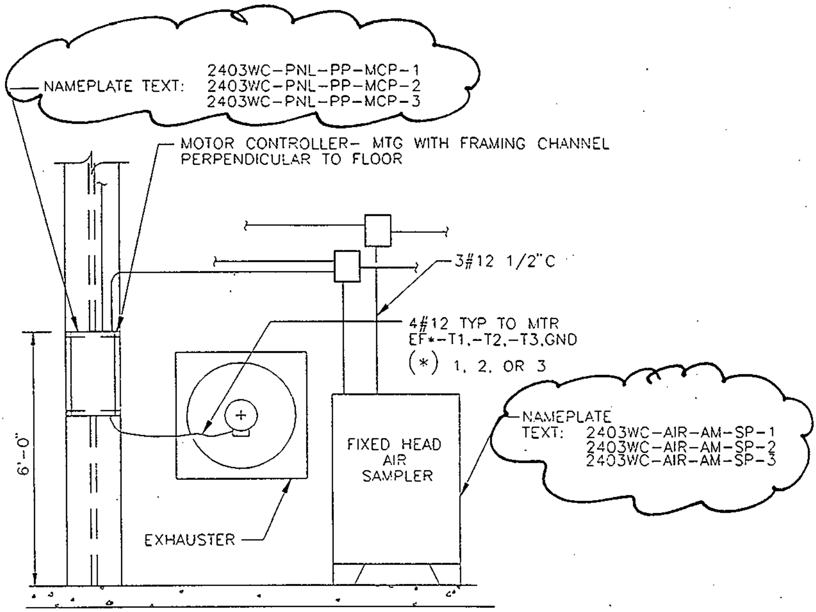
H-2-80919 SH1

FOR 'WAS' CONDITION SEE PREVIOUS REVISION



H-2-80922 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISION



ELEVATION - SP-1 & 2

COL 2 & 4
SCALE: 1/2" = 1'-0"

ELEVATION - SP-3

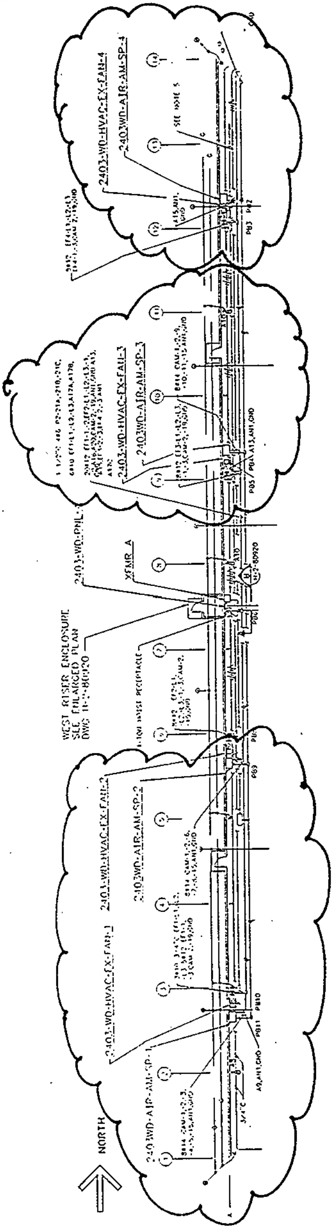
COL 6
OPPOSITE HAND

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

1. ECN 637393

H-2-80917 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REVIS...



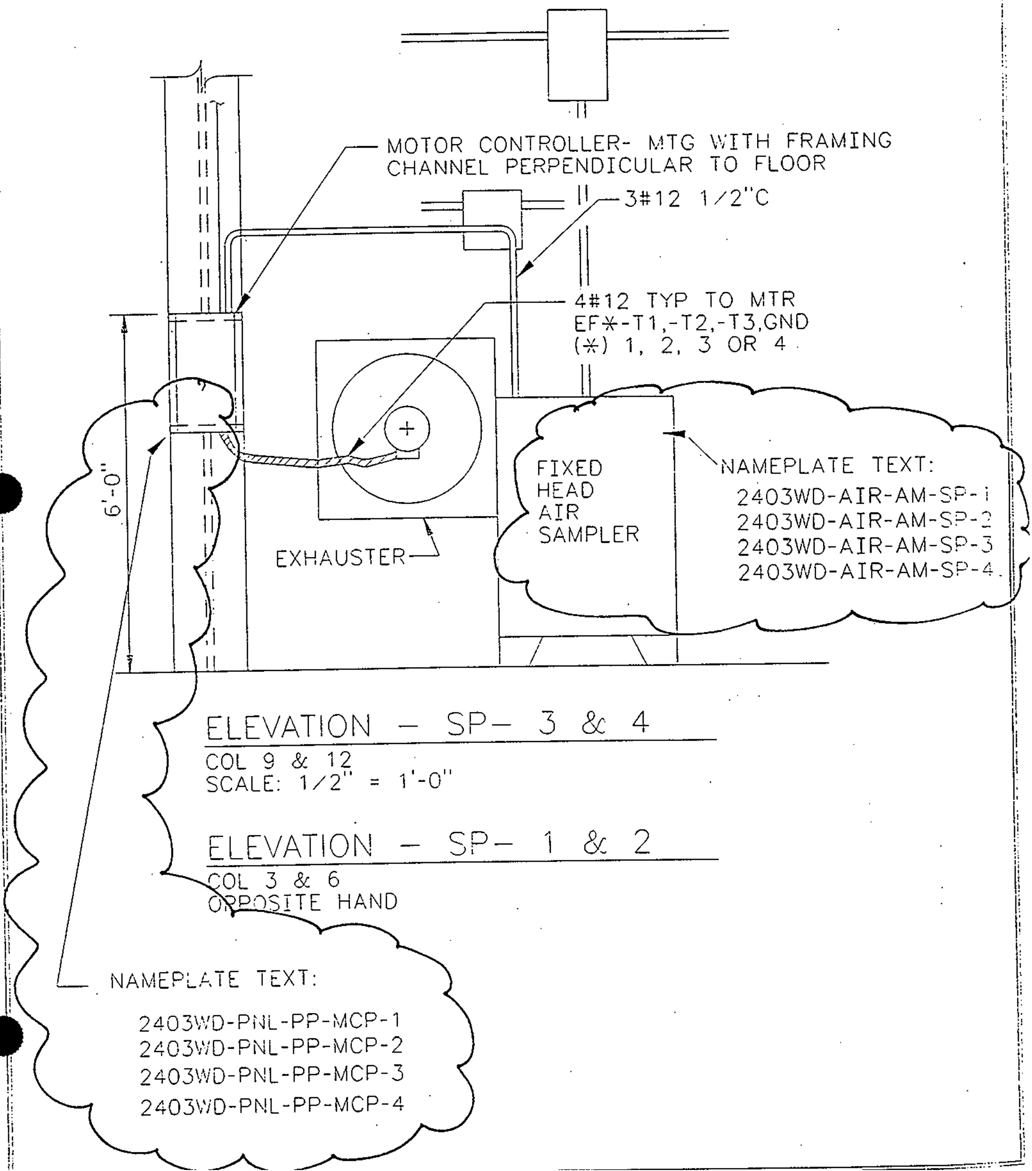
ENGINEERING CHANGE NOTICE CONTINUATION SHEET

PAGE 19 OF 19

1. ECN 637393

H-2-80920 SHT. 1

FOR 'WAS' CONDITION SEE PREVIOUS REVISION



ELEVATION - SP- 3 & 4

COL 9 & 12
SCALE: 1/2" = 1'-0"

ELEVATION - SP- 1 & 2

COL 3 & 6
OPPOSITE HAND

ESSENTIAL

ENGINEERING CHANGE NOTICE

Page 1 of 4

1. ECN № 623646

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [x] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	KM McDONALD, 87250, T4-03, 373-4981	[X] Yes [] No	08/29/95
	5. Project Title/No./Work Order No. Central Waste Complex/A4D38	6. Bldg./Sys./Fac. No. CWC	7. Approval Designator S
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) See Block 12	9. Related ECN No(s). 623645	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Change the Essential/Support status of the drawings listed on page 3 of this ECN.

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

Drawings on the essential and support drawing list have been re-evaluated. Essential drawings were determined to be unnecessary, and are changed to support drawing or, in the case of 213W drawings, are redesignated as general drawings for turnover to West Tank Farms custody.

14. Distribution (include name, MSIN, and no. of copies)

KM McDonald, T4-03, 1
VE Renard, T4-03, 1
RJ Koll, T3-05, 1
File, T4-03, 1
JM Nielsen, T4-04, 1
PJ Crane, T4-04, 1
RR Durfee, T4-04, 1
JM Isdell, R4-05, 1

RELEASE STAMP

OFFICIAL RELEASE 58
BY WHC
DATE SEP 21 1995
Sta. 4

15. Design Verification Required	16. Cost Impact						17. Schedule Impact (days)		
	ENGINEERING			CONSTRUCTION					
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]	
[X] No	Savings	[]	$N/A	Savings	[]	$N/A	Delay	[]	N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]	Essential/Support Dwg List	[X]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
WHC-SD-WM-TI-404 (This is changed by ECN 623645)		

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. KM MCDONALD K.M. McDonald	9/11/95	PE N/A	
Cog. Mgr. DB POWELL D.B. Powell	9/11/95	QA N/A	
QA N/A		Safety N/A	
Safety RJ KOLL R.J. Koll	14 Sep 95	Design N/A	
Environ. N/A		Environ. N/A	
Other VE RENARD Victor E. Renard	9/11/95	Other N/A	
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature N/A	
		ADDITIONAL	

Change the essential/support status of the following drawings (latest revs.):

H-2-80543, Sh. 1, Change from essential to general, Rev. 3
H-2-80544, Sh. 1, Change from essential to support, Rev 5
H-2-80579, Sh. 1, Change from essential to general, Rev. 2
H-2-80580, Sh. 1-2, Change from essential to general, Rev. 4 ; Rev 3
H-2-80605, Sh. 1, Change from essential to general, Rev 2
H-2-80607, Sh. 1, Change from essential to support, Rev. 2
H-2-80608, Sh. 1, Change from essential to support, Rev 3
H-2-80609, Sh. 1, Change from essential to support, Rev. 3
H-2-80740, Sh. 1-2, Change from essential to support, Rev 4, Rev. 3
H-2-80741, Sh. 1-2, Change from essential to support, Rev. 3,
H-2-80743, Sh. 1-3, Change from essential to support, Rev. 4, Rev. 0
H-2-80744, Sh. 1, Change from support to general, Rev. 2
H-2-80902, Sh. 1-3, Change from essential to support, Rev 4
H-2-80903, Sh. 1-3, Change from essential to support, Rev. 4
H-2-80904, Sh. 1-3, Change from essential to general, Rev 4
H-2-80905, Sh. 1-3, Change from essential to support, Rev 3, Rev. 4, Rev 0
H-2-80906, Sh. 1-3, Change from essential to support, Rev. 3, Rev. 4, Rev 2
H-2-80907, Sh. 1-3, Change from essential to support, Rev 3, Rev. 4, Rev 0
H-2-80908, Sh. 1-3, Change from essential to support, Rev. 3, Rev. 4, Rev 2
H-2-80909, Sh. 1-3, Change from essential to support, Rev. 4, Rev. 0
H-2-80910, Sh. 1-3, Change from essential to support, Rev. 3, Rev. 4 ; Rev. 2
H-2-80917, Sh. 1, Change from essential to support, Rev. 4
H-2-80918, Sh. 1, Change from essential to support, Rev 4
H-2-80919, Sh. 1, Change from essential to support, Rev. 3
H-2-80920, Sh. 1, Change from essential to support, Rev. 5
H-2-80921, Sh. 1, Change from essential to support, Rev 4
H-2-80922, Sh. 1, Change from essential to support, Rev 4
H-2-80923, Sh. 1, Change from essential to support, Rev. 5
H-2-80924, Sh. 1, Change from essential to support, Rev 4
H-2-80925, Sh. 1, Change from essential to support, Rev. 5
H-2-93700, Sh. 2, Change from essential to general, Rev. 3
H-2-93701, Sh. 2,3,5, Change from essential to general, Rev. 2 ; Rev. 3
H-2-93702, Sh. 2, Change from essential to general, Rev. 7
H-2-93703, Sh. 2-3, Change from essential to general, Rev. 3, Rev 7
H-2-93704, Sh. 1, Change from essential to general, Rev 5
H-2-93705, Sh. 1, Change from essential to general, Rev. 4
H-2-93707, Sh. 1, Change from essential to general, Rev 4
H-2-93708, Sh. 1, Change from essential to general, Rev. 2
H-2-93709, Sh. 1, Change from essential to general, Rev. 2
H-2-93712, Sh. 1, Change from essential to general, Rev 2
H-2-93713, Sh. 1-2, Change from essential to general, Rev 2, Rev. 1
H-2-94099, Sh. 1, Change from support to general, Rev. 3
H-2-94099, Sh. 2, Change from essential to general, Rev. 3
H-2-131542, Sh. 1, Change from essential to support, Rev. 3
H-2-131543, Sh. 1, Change from essential to support, Rev. 3
H-2-131544, Sh. 1, Change from essential to general, Rev. 2
H-2-131545, Sh. 1-2, Change from essential to support, Rev. 2
H-2-131546, Sh. 1-3, Change from essential to support, Rev. 4, Rev. 3, Rev 0
H-2-131547, Sh. 1-2, Change from essential to support, Rev. 4, Rev 1
H-2-131548, Sh. 1-2, Change from essential to support, Rev. 2, Rev 1
~~H-2-821878, Sh. 1-2, Change from essential to support~~ mw 9/21/95
H-2-821880, Sh. 1-2, Change from essential to support, Rev. 0

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	ECN 623646
Page 4 of 4	Date 08/29/95

H-2-821881, Sh. 1-2, Change from essential to support, Rev 0
H-2-821882, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821883, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821884, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821885, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821886, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821887, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821888, Sh. 1-2, Change from essential to support, Rev 0
H-2-821889, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821890, Sh. 1-2, Change from essential to support, Rev. 0
H-2-821891, Sh. 1-2, Change from essential to support, Rev. 0
~~H-2-821893, Sh. 1-5, Change from essential to support~~ mw
~~H-2-821894, Sh. 1-5, Change from essential to support~~ 9/21/95
~~H-2-821895, Sh. 1-5, Change from essential to support~~
~~H-2-821896, Sh. 1-5, Change from essential to support~~

IOF 37

START

ENGINEERING CHANGE NOTICE **ESSENTIAL**

Page 1 of 2

1. ECN № 620865

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void [X]	VICTOR E. RENARD, T4-03, 373-1899	[] Yes [X] No	May 4, 1995
	5. Project Title/No./Work Order No. CWC LABELING	6. Bldg./Sys./Fac. No. 2403WA, 2403WB, 2403WC 2403-WD	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) SEE BLOCK 12	9. Related ECN No(s). 617743	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

CANCEL ECN 617743.

H-2-80920 sht 1 Rev 5,
H-2-80923 sht 1 Rev 5,
H-2-80921 sht 1 Rev 4,
H-2-80922 sht 1 Rev 4,
H-2-80925 sht 1 Rev 4,
H-2-99966 sht 1 Rev 2,
H-2-80897 sht 1 Rev 3,
H-2-80898 sht 1 Rev 3,
H-2 80904 sht 1 Rev 3,
H-2-80904 sht 2 Rev 3,
H-2-80904 sht 3 Rev 3,
H-2-80918 sht 1 Rev 3,
H-2-131548 sht 1 Rev 2,
H-2-131548 sht 2 Rev 1.
H-2-80917 sht 1 Rev 4

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

CRITERIA FOR LABELING HAS CHANGED SINCE ECN WAS SUBMITTED. NEW ECN WILL BE SUBMITTED WITH CORRECT INFORMATION.

STA. 3, 4, 5, 20, 15

14. Distribution (include name, MSIN, and no. of copies)

S. GRIFFIN	T4-03	STATION 3	S2-05
STATION 4	R1-29	V. RENARD	T4-03
STATION 20	T4-00	STATION 5	T4-30

RELEASE STAMP

OFFICIAL RELEASE 25
BY WHC
DATE MAY 11 1995
STA. 5

A-7900-013-2 (11/94) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE	Page 2 of 2	1. ECN (use no. from pg. 1) 620865

15. Design Verification Required	16. Cost Impact						17. Schedule Impact (days)	
	ENGINEERING			CONSTRUCTION				
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]
[X] No	Savings	[]	$N/A	Savings	[]	$N/A	Delay	[] N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[] N/A	Inventory Adjustment Request	[] N/A		[] N/A

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

20. Approvals

	Signature	Date		Signature	Date
OPERATIONS AND ENGINEERING			ARCHITECT-ENGINEER		
Cog. Eng. Victor E. Renard	Victor E. Renard	5/4/95	PE		
Cog. Mgr. D. B. Powell Jr.	D B Powell	5/4/95	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		
			DEPARTMENT OF ENERGY		
			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

ENGINEERING CHANGE NOTICE **ESSENTIAL**

1. ECN № 620864

Proj. ECN

2. ECN Category (mark one) Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	3. Originator's Name, Organization, MSIN, and Telephone No. Victor E. Renard, SWMFE, T4-03, 373-1899	3a. USQ Required? [] Yes [x] No	4. Date May 3, 1995
	5. Project Title/No./Work Order No. CWC LABELING	6. Bldg./Sys./Fac. No. 2402W Series	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) SEE BLOCK 12	9. Related ECN No(s). 187307	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

1. Add labels to H-2-80605 sht 1 rev. 2 Foundation/Floor Plan as shown on page 3.
2. Revise drawing H-2-80607 sht 1 rev. 2 as as shown on page 4 and 5.
3. Revise drawing H-2-80743 sht 1 rev. ~~2~~ 3 VEK/sc 5-8-95 as as shown on page 6 and 7.
4. Revise drawing H-2-80739 sht 1 rev. 2 as as shown on page 8.

13a. Justification (mark one)

Criteria Change	[]	Design Improvement	[X]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

To support effort of labeling all systems in the Central Waste Complex. To allow for identificatiion of each component on drawings by unique number.

14. Distribution (include name, MSIN, and no. of copies)

SHERI GRIFFIN	T4-03	STATION 3	S2-05
STATION 4	R1-29	V.E. RENARD	T4-03
STATION 20	T4-00		
STATION 5	T4-30		

RELEASE STAMP

OFFICIAL RELEASE 23
BY WHC
DATE MAY 08 1995
STA. 5

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) 620864

15. Design Verification Required	16. Cost Impact						17. Schedule Impact (days)		
	ENGINEERING			CONSTRUCTION					
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]	
[X] No	Savings	[]	$N/A	Savings	[]	$N/A	Delay	[]	N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[] NA	Inventory Adjustment Request	[] NA		[] NA

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

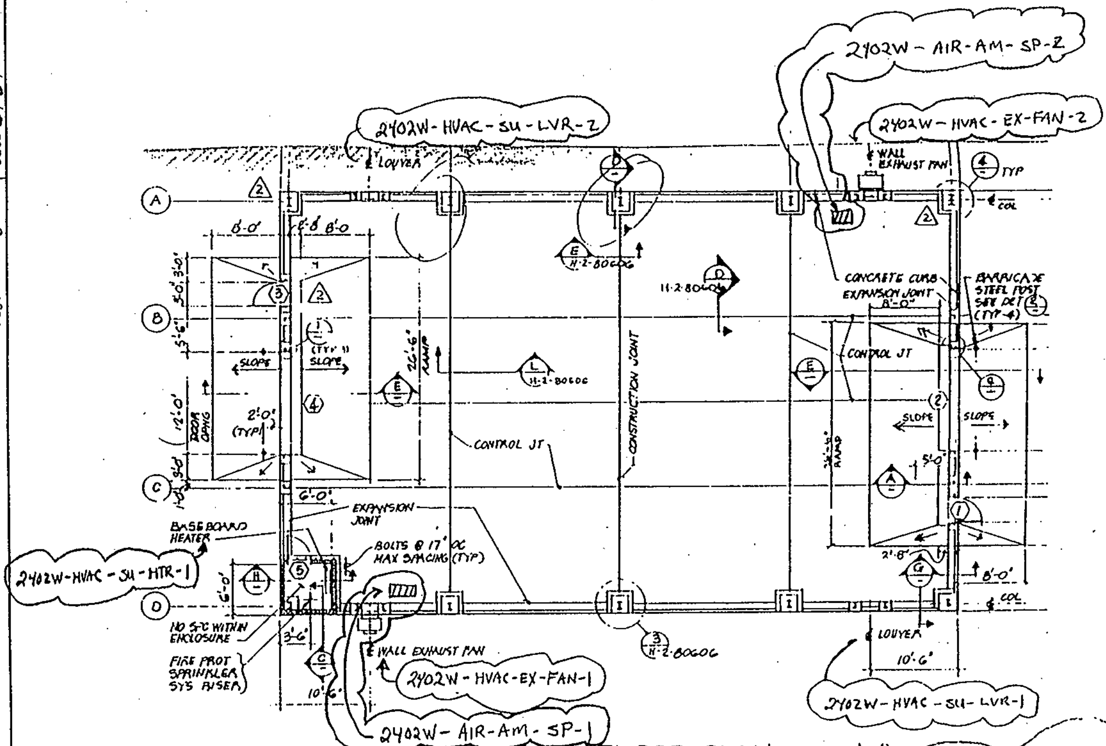
Document Number/Revision	Document Number/Revision	Document Number Revision

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. V. E. Renard Victor E. Renard	5/3/95	PE	
Cog. Mgr. D. B. Powell D B Powell	5/3/95	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other Independent Review Mat Irin	5/3/95	Other	
ER 8040			
Projects/programs			
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

See illustration:



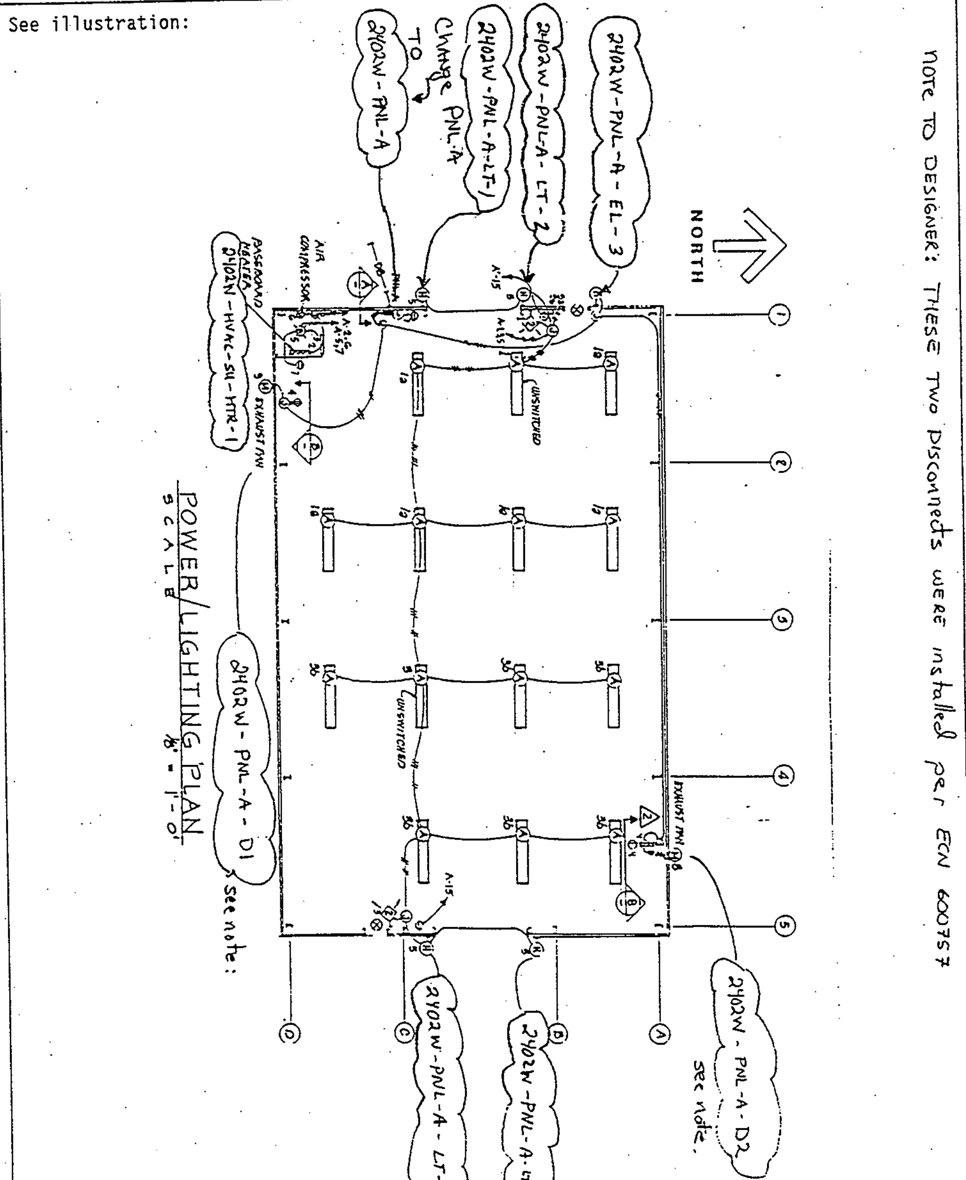
FOUNDATION/FLOOR PLAN (FL EL 0'-0")
SCALE 1/8" = 1'-0"

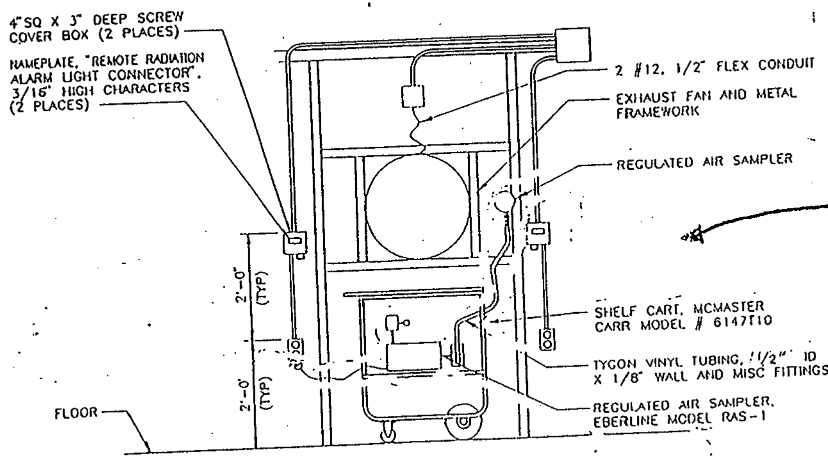
LOCATE ON PAGE AS NECESSARY

DOOR SCHEDULE	
#	LABEL
1	2402W - DOOR - GE - 1
2	2402W - DOOR - RD - 1
3	2402W - DOOR - GE - 2
4	2402W - DOOR - RD - 2
5	2402W - DOOR - GE - 3

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	Page 4 of 8	ECN 620864 Date 5/3/95

See illustration:





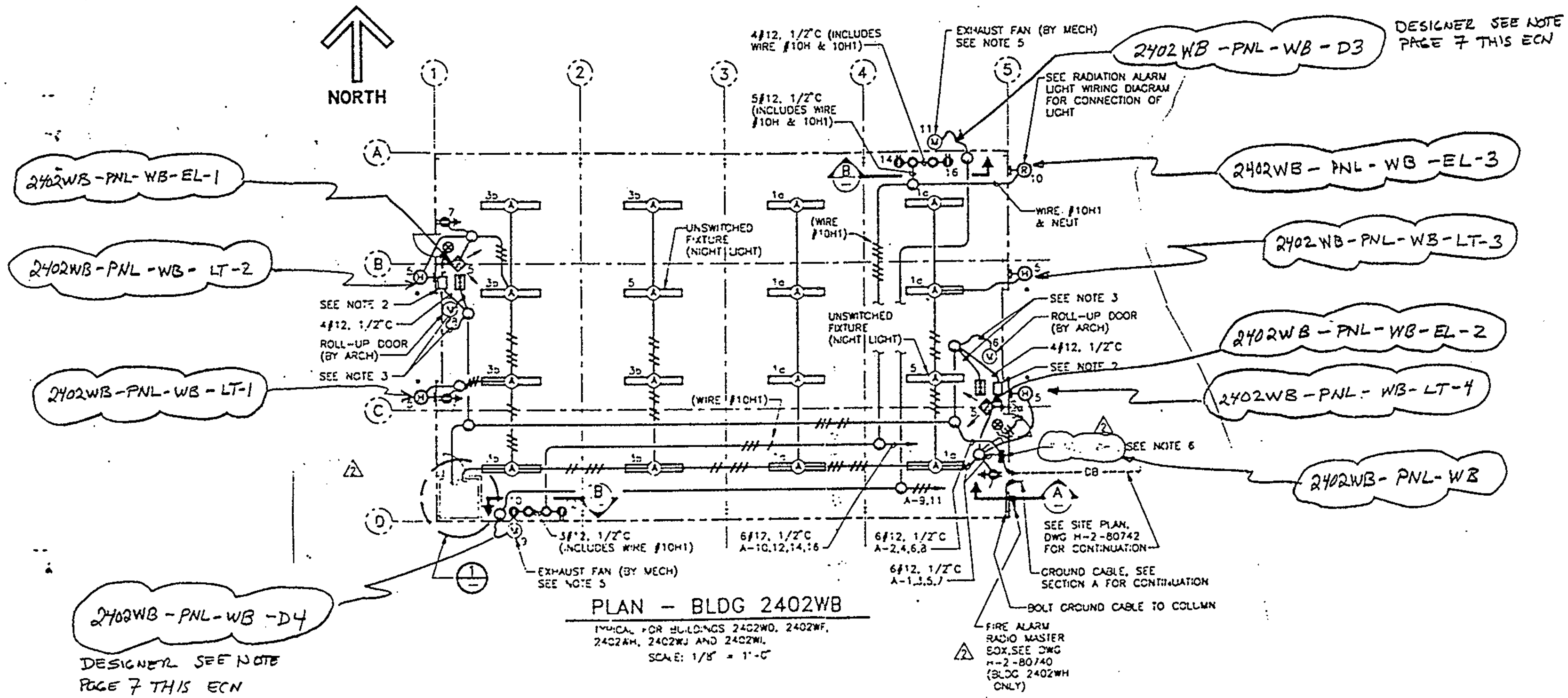
FIXED HEAD HEAD AIR SAMPLER ASSEMBLY (B)

SCALE: NONE

Location	Label
South wall	2402W - AIR - Am - SP 1
North wall	2402W - AIR - Am - SP 2

LOCATE THIS TABLE IN SECTION B. NOTE: THIS FHAS WAS ADDED BY ECN 187307

[illegible]



PLAN - BLDG 2402WB

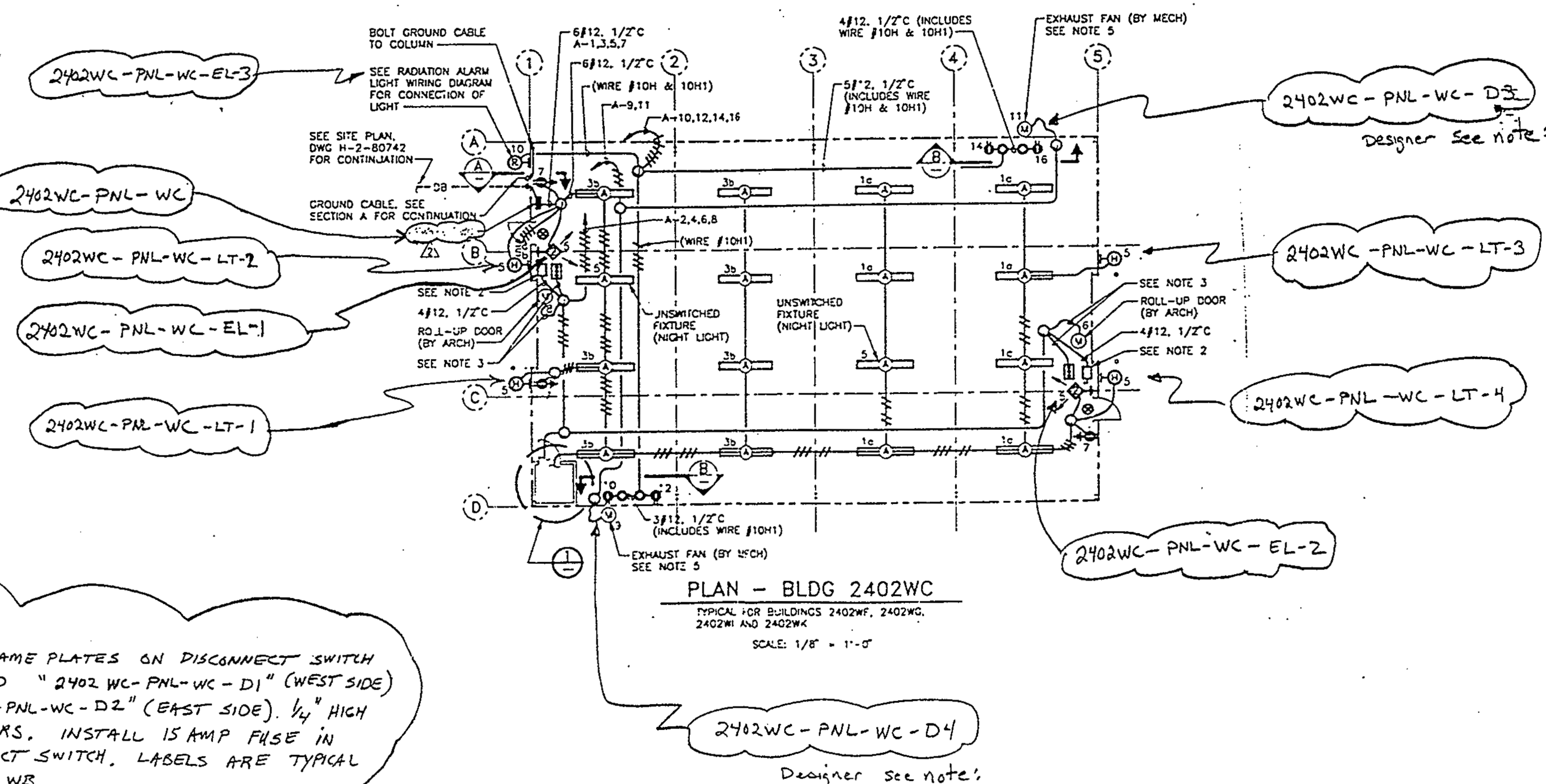
TYPICAL FOR BUILDINGS 2402WD, 2402WF, 2402WH, 2402WJ AND 2402WL

SCALE: 1/8" = 1'-0"

DWG H-2-80743 Sht 1

1. ECN 620864

N



PLAN - BLDG 2402WC

TYPICAL FOR BUILDINGS 2402WF, 2402WG, 2402WI AND 2402WK

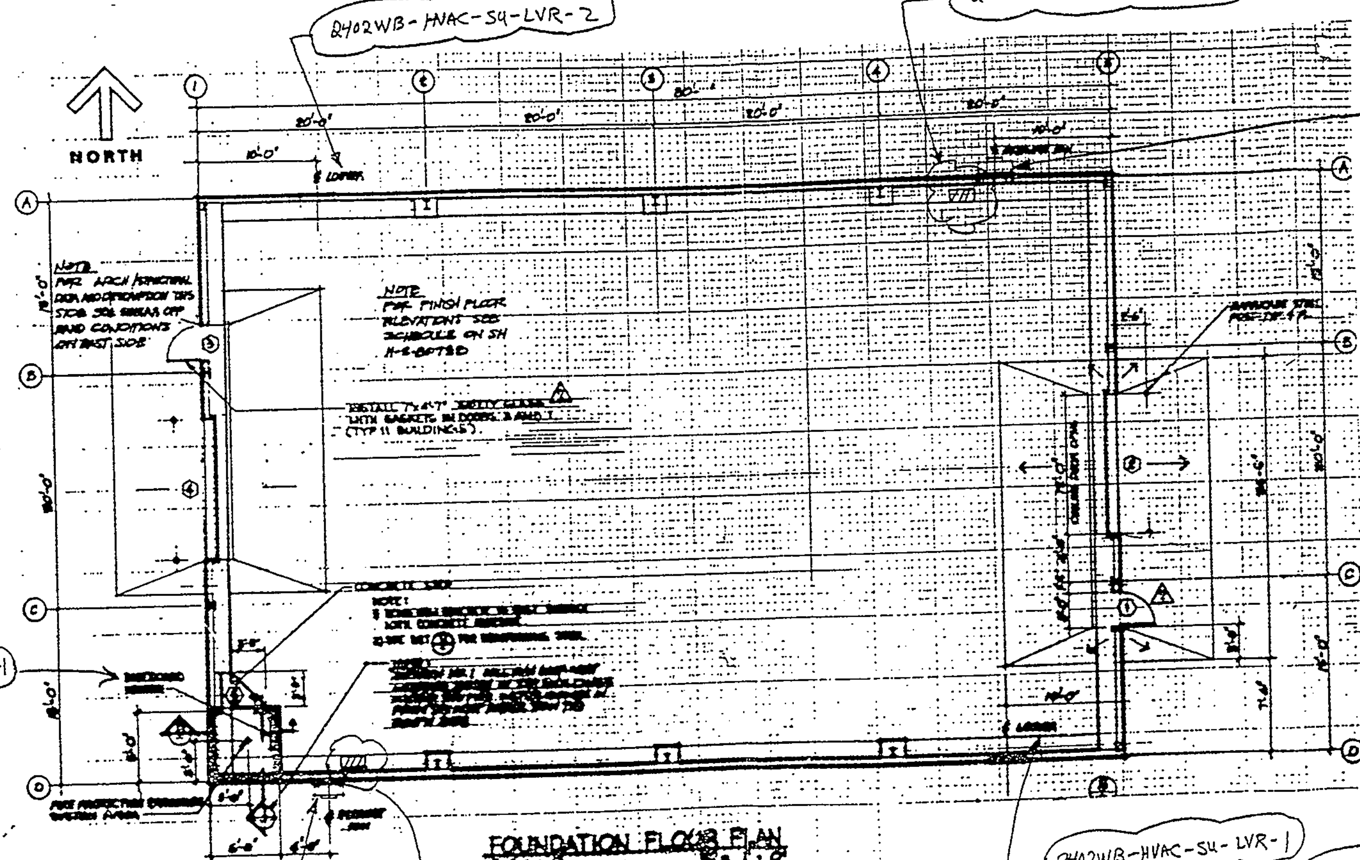
SCALE: 1/8" = 1'-0"

Notes

2. MOUNT NAME PLATES ON DISCONNECT SWITCH ENGRAVED "2402 WC-PNL-WC-D1" (WEST SIDE) "2402 WC-PNL-WC-D2" (EAST SIDE). 1/4" HIGH CHARACTERS. INSTALL 15 AMP FUSE IN DISCONNECT SWITCH. LABELS ARE TYPICAL FOR 2402 WB.

Note: THESE TWO DISCONNECTS ARE ADDED BY ECN 161754

DWG H-2-80739 Sht 1



ADD SCHEDULE TO DWG

DOOR SCHEDULE	
#	LABEL
1	2402WB - DOOR - GE-2
2	2402WB - DOOR - RD-2
3	2402WB - DOOR - GE-1
4	2402WB - DOOR - RD-1
5	2402WB - DOOR - GE-3

General Note: LABELS ARE TYPICAL FOR BUILDINGS 2402WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL

IPF #10, #7

ESSENTIAL
ENGINEERING CHANGE NOTICE

1. ECN № 617742

Proj. ECN

2. ECN Category (mark one) Supplemental [x] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	3. Originator's Name, Organization, MSIN, and Telephone No. Victor E. Renard, SWMFE, T4-03, 373-1899	3a. USQ Required? [] Yes [x] No	4. Date February 23, 1995
	5. Project Title/No./Work Order No. SY-101 LLCE	6. Bldg./Sys./Fac. No. 2403-WD/CWC	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) See Block 12	9. Related ECN No(s). N/A	10. Related PO No. N/A

11a. Modification Work [X] Yes (fill out Blk. 11b) [] No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. KEH Job # 256	11c. Modification Work Complete JUN 1 4 1995 25 Victor E. Renard 6/13/95 Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A Cog. Engineer Signature & Date

12. Description of Change

1. REVISE DWG. H-2-80895 REV. 3 SHT. 1 AS SHOWN ON PAGE 3.
2. REVISE DWG. H-2-80896 REV. 5 SHT. 1 AS SHOWN ON PAGE 4.
3. REVISE DWG. H-2-80901 REV. 2 SHT. 2 AS SHOWN ON PAGE 5.
4. REVISE DWG. H-2-80897 REV. 3 SHT. 1 AS SHOWN ON PAGE 6.
5. REVISE DWG. H-2-80917 REV. 3 SHT. 1 AS SHOWN ON PAGE 7.
6. REVISE DWG. H-2-80902 REV. 2 SHT. 3 AS SHOWN ON PAGE 8.
7. REVISE DWG. H-2-80904 REV. 3 SHT. 1 AS SHOWN ON PAGE 9.
8. REVISE DWG. H-2-80899 REV. 2 SHT. 1 AS SHOWN ON PAGE 10.

13a. Justification (mark one)

Criteria Change	[]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[X]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

THE ADDITION OF THE CONCRETE SLAB AND THE ROLL UP DOOR, AT THIS LOCATION, IS NECESSARY TO FACILITATE TRANSPORTING LONG LENGTH CONTAMINATED EQUIPMENT FROM TANK FARMS INTO THE 2403 WD BUILDING.

14. Distribution (include name, MSIN, and no. of copies)

S. GRIFFIN	T4-03	STATION 3	S2-05
STATION 4	R1-29		
V. RENARD	T4-03	STATION 20	T4-00
T. OSTRANDER	S2-54	STATION 5	T4-30
G. BROWER	S2-55	B. KOONS	S3-08
W. ADAMEK	E6-25	B. MORRISON	S2-53
R. JIMENEZ	S4-43	V. CHAMBERLAIN	S2-55
IPF #7	T2-06	IPF #10	S2-40

RELEASE STAMP

OFFICIAL RELEASE BY WHC (12)
DATE FEB 24 1995
Sta #6

A-7900-013-2 (11/94) GEF095

A-7900-013-1

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $N/A	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[] N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[] N/A	Inventory Adjustment Request	[] N/A		[] N/A

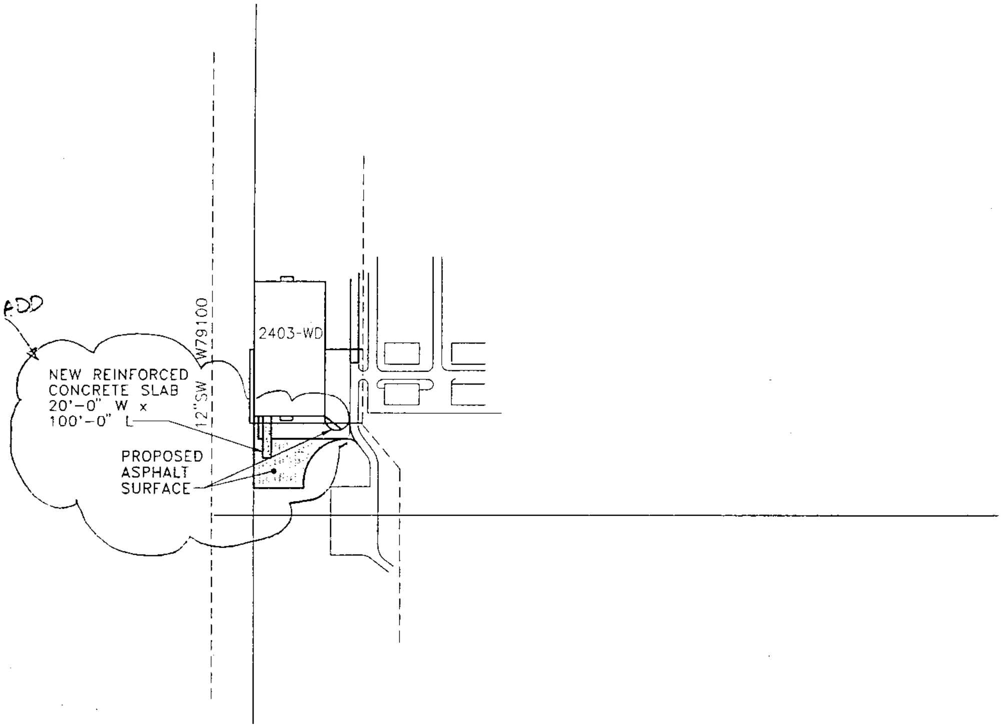
19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision

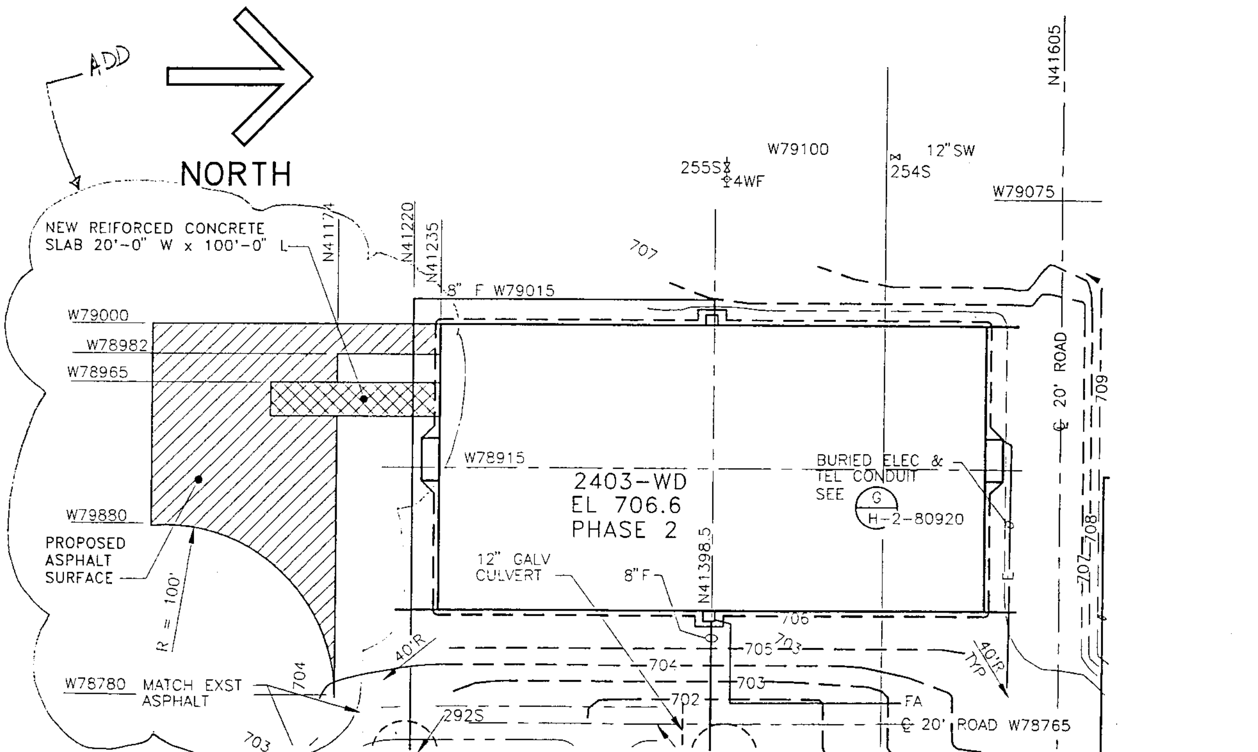
20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. VICTOR E. RENARD Victor E. Renard	2/23/95	PE	
Cog. Mgr. D.B. POWELL D.B. Powell	2/23/95	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other Independent Review Mat Ii	2/23/95	Other	
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

ENGINEERING CHANGE NOTICE CONTINUATION SHEET | PAGE 3 of 10 | 1. ECN 617742



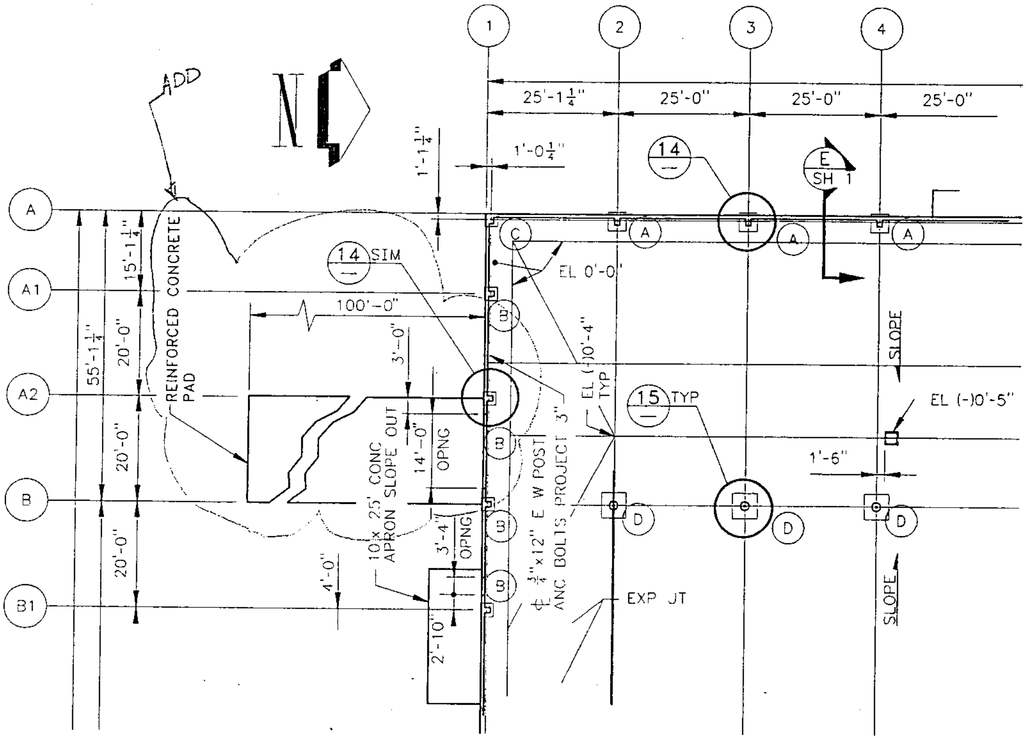
ENGINEERING CHANGE NOTICE CONTINUATION SHEET	PAGE 4 of 10	1. ECN 617742



B080896A

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

1. ECN 617742



B0609018

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

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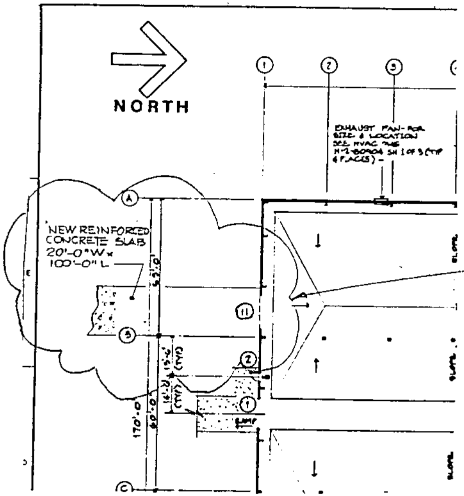


ADD

DOOR SCHEDULE (SEE NOTES 5&6)

NO	TYPE	LOCATION	OPNG SIZE	THICK	FRAME HEAD	FRAME JAMBS	FRAME SILL	HDW GROUP	WS	LABEL	REMARKS
1	B	—	12'-0"x15'-0"	—	11	11	11	—	YES	—	
2	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	2	YES	—	
3	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	1	YES	—	
4	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
5	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	1	YES	—	
6	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	2	YES	—	
7	B	—	12'-0"x15'-0"	—	11	11	11	—	YES	—	
8	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	1	YES	—	
9	C	—	3'-0"x7'-0"	1 3/4"	6	7	10	1	YES	—	
10	A	—	3'-0"x7'-0"	1 3/4"	6SM	7SM	10	1	YES	—	
11	B	—	12'6"x15'0"	—	11	11	11	—	Yes	—	

U.S. DEPARTMENT OF ENERGY
Richland Operations Office
KAISER ENGINEERS HANFORD COMPANY

ARCHITECTURAL FLOOR PLAN & SCHED

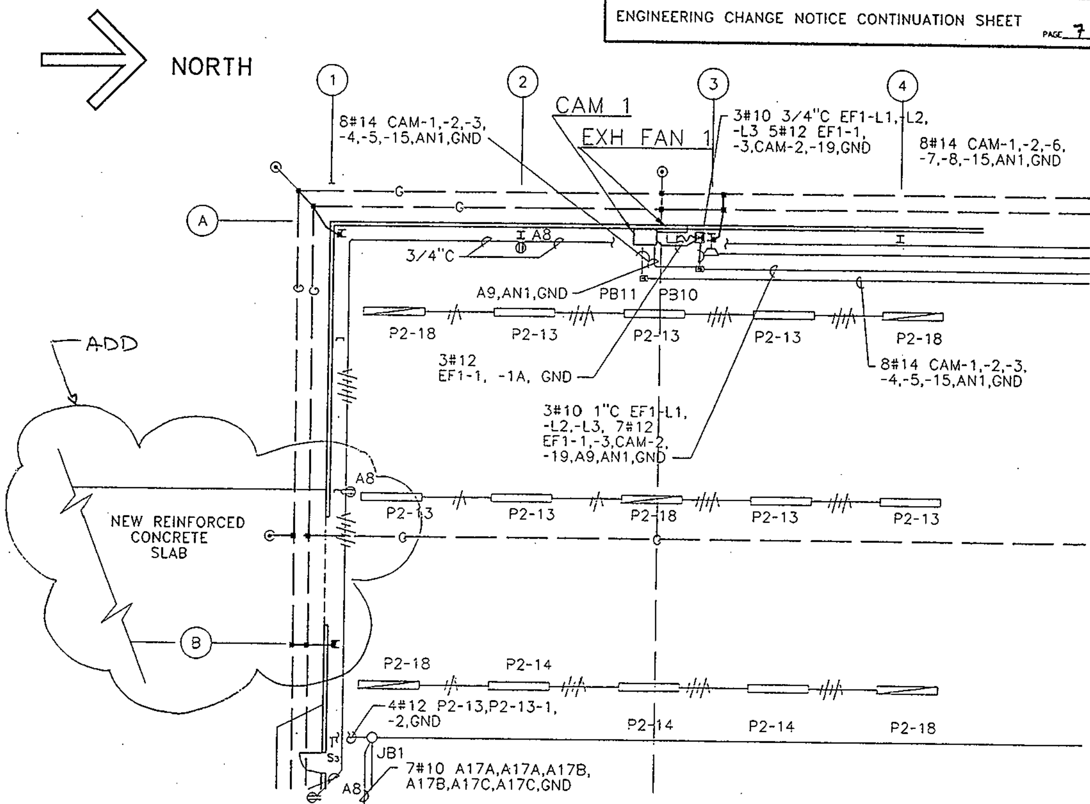
W-0164 RMW STORAGE FACILITY

F | NO | 0800 | H-2-80897 | 3

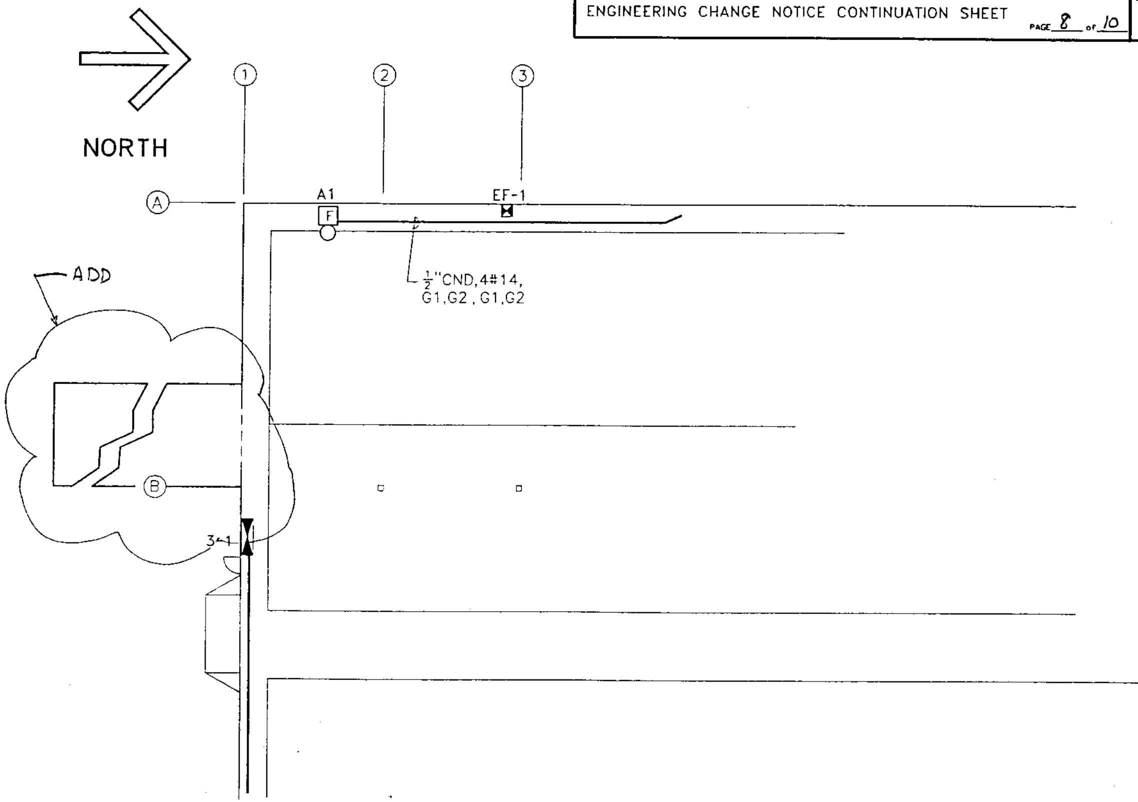
SHOWN | CE9269 | SHEET 1 OF 1

H-2-80897 SH 1

ENGINEERING CHANGE NOTICE CONTINUATION SHEET | PAGE 7 of 10 | 1. ECN 617742



B080917A



B0809020

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

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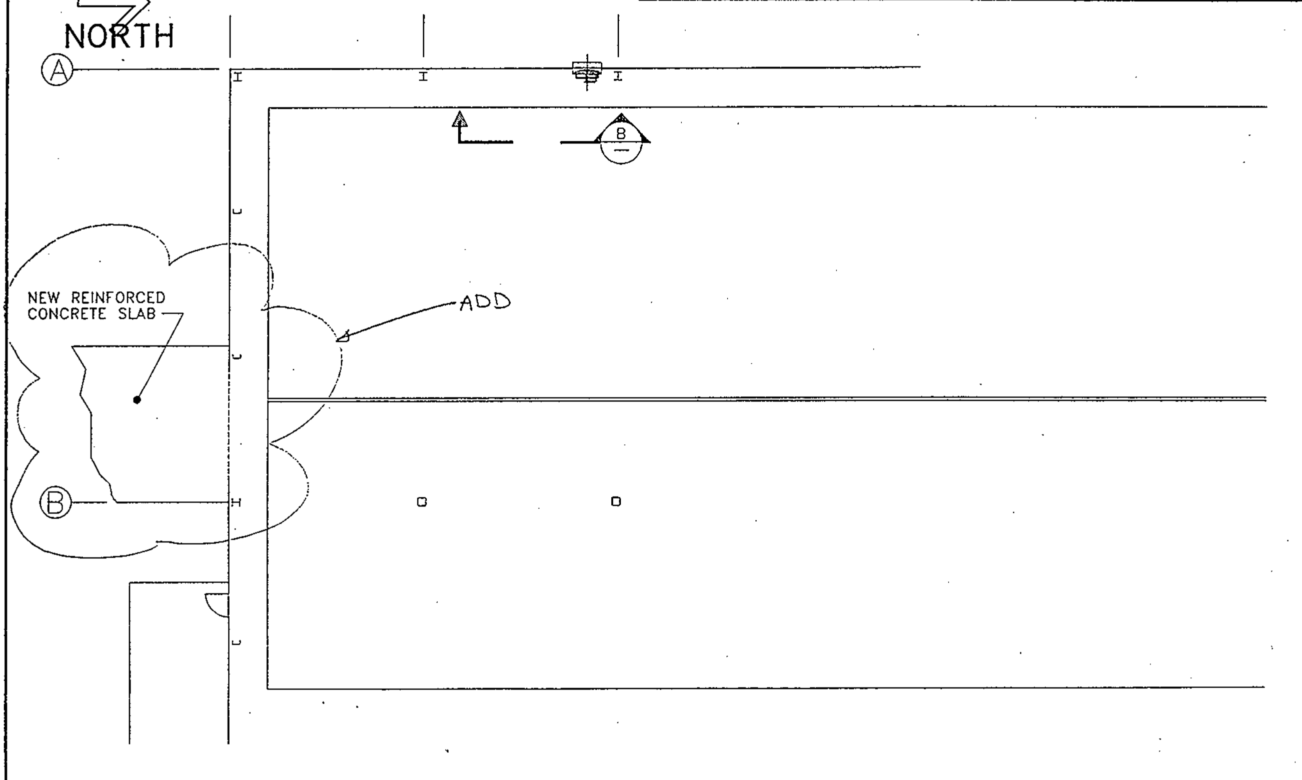
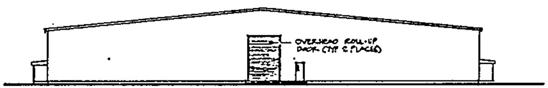
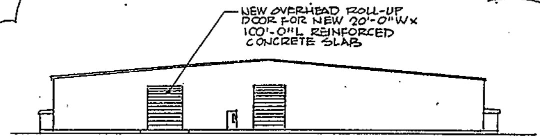


1. ECN 617742



NORTH ELEVATION

DELETE TYP



SOUTH ELEVATION

ADD SOUTH ELEVATION

ENGINEERING CHANGE NOTICE

1. ECN 605651

Proj. ECN NA

2. ECN Category (mark one) Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	3. Originator's Name, Organization, MSIN, and Telephone No. P. M. Rickords 87250 T4-03 3-9233		4. Date Jan. 21, 1994
	5. Project Title/No./Work Order No. 2403WD Column Fix / A130A	6. Bldg./Sys./Fac. No. 2403WD	7. Impact Level 3QS
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) H-2-80901 sh. 2 rev. 2	9. Related ECN No(s). NA	10. Related PO No. NA

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[X] Yes (fill out Blk. 11b) [] No (NA Blks. 11b, 11c, 11d)	2X-94-~~5747~~ 00046 PML 1-27-94	Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

This ECN adds changes to a column to maintain structural integrity of the building.

- Add changes to column C11 (Zone D4) as shown in page 3.
- Add details as shown in page 4.

13a. Justification (mark one)	Criteria Change [X]	Design Improvement []	Environmental []
As-Found []	Facilitate Const. []	Const. Error/Omission []	Design Error/Omission []

13b. Justification Details

The column was hit by a fork lift and was bent. This ECN details the repairs to the column to maintain structural integrity of the building.

Design Verification method is independent review.

14. Distribution (include name, MSIN, and no. of copies)

P. M. Rickords	T4-03	1
E. M. Megahed	T4-03	1
S. A. Griffin	T4-03	(file)
S. TURNER	T4-06	
CDU'S #4	R1-29	

RELEASE STAMP

OFFICIAL RELEASE BY WHC 63

DATE JAN 31 1994

Sta. #6

A-7900-013-2 (06/92) GEF095

A-7900-013-1 (06/92)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) 605651

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[X] Yes	Additional [ ]	$ NA	Additional [ ]	$ N/A	Improvement [ ]	NA
[ ] No	Savings [ ]	$	Savings [ ]	$	Delay [ ]	

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[X]	Seismic/Stress Analysis	[ ]	Tank Calibration Manual	[ ]
Functional Design Criteria	[ ]	Stress/Design Report	[ ]	Health Physics Procedure	[ ]
Operating Specification	[ ]	Interface Control Drawing	[ ]	Spares Multiple Unit Listing	[ ]
Criticality Specification	[ ]	Calibration Procedure	[ ]	Test Procedures/Specification	[ ]
Conceptual Design Report	[ ]	Installation Procedure	[ ]	Component Index	[ ]
Equipment Spec.	[ ]	Maintenance Procedure	[ ]	ASME Coded Item	[ ]
Const. Spec.	[ ]	Engineering Procedure	[ ]	Human Factor Consideration	[ ]
Procurement Spec.	[ ]	Operating Instruction	[ ]	Computer Software	[ ]
Vendor Information	[ ]	Operating Procedure	[ ]	Electric Circuit Schedule	[ ]
OM Manual	[ ]	Operational Safety Requirement	[ ]	ICRS Procedure	[ ]
FSAR/SAR	[ ]	IEFD Drawing	[ ]	Process Control Manual/Plan	[ ]
Safety Equipment List	[ ]	Cell Arrangement Drawing	[ ]	Process Flow Chart	[ ]
Radiation Work Permit	[ ]	Essential Material Specification	[ ]	Purchase Requisition	[ ]
Environmental Impact Statement	[ ]	Fac. Proc. Samp. Schedule	[ ]		[ ]
Environmental Report	[ ]	Inspection Plan	[ ]		[ ]
Environmental Permit	[ ]	Inventory Adjustment Request	[ ]		[ ]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

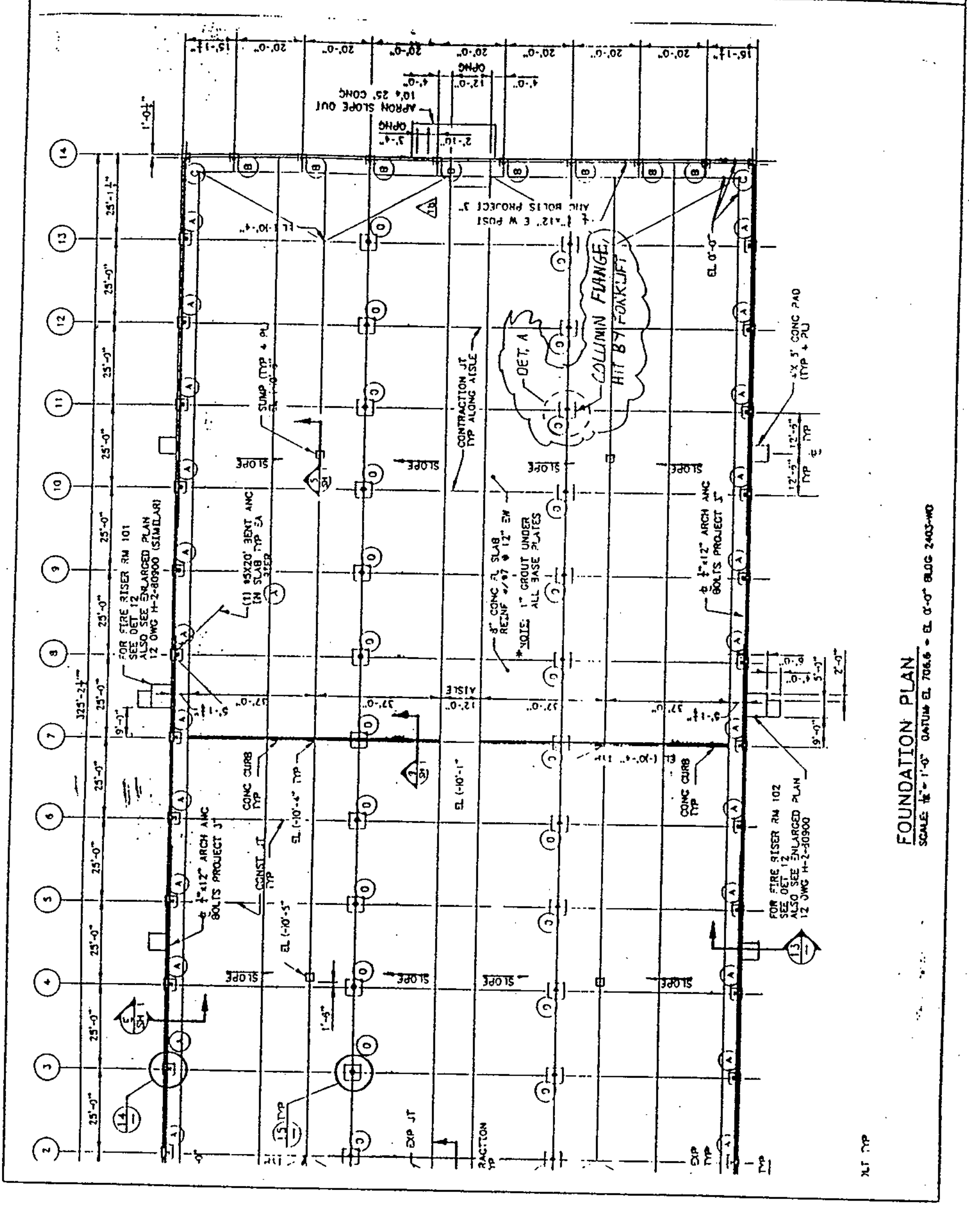
Document Number/Revision	Document Number/Revision	Document Number Revision
WHC-SD-WM-OA-141 Rev. 0		

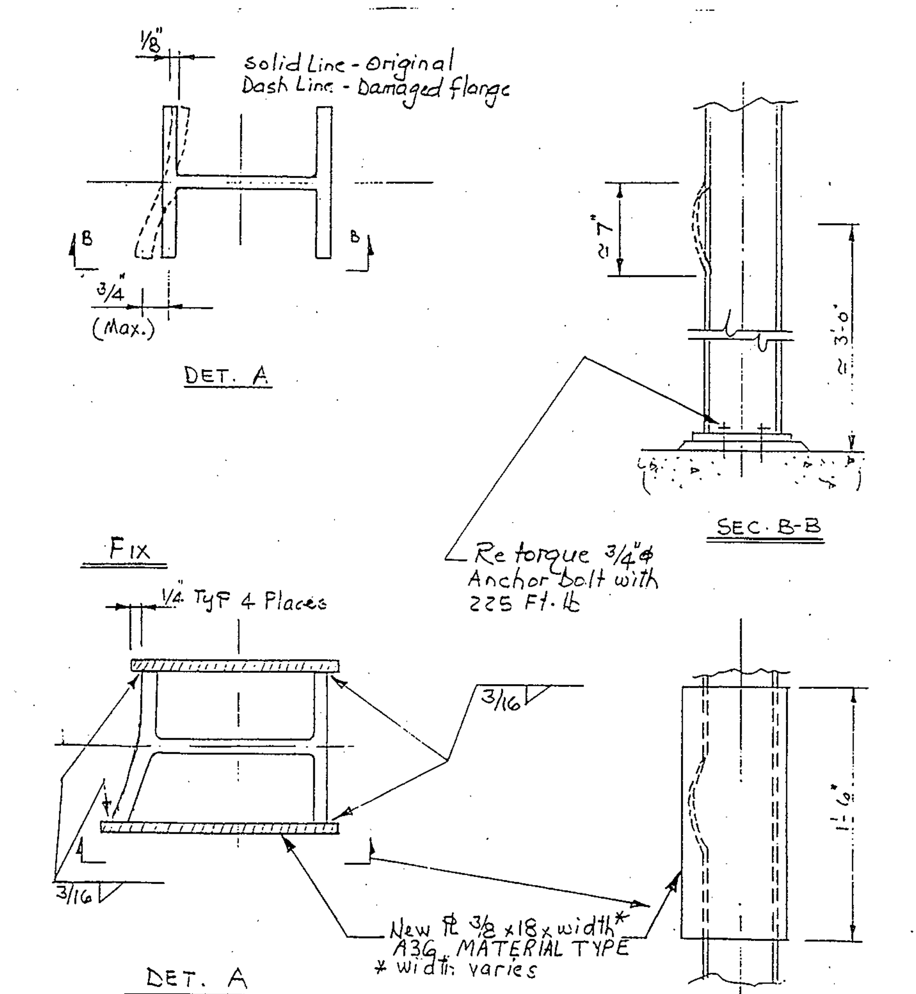
20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer [signature]	1/24/94	PE	
Cog./Project Engr. Mgr. [signature]	1/25/94	QA	
QA [signature]	1/27/94	Safety	
Safety [signature]	1/28/94	Design	
Security		Other	
Proj. Prog./Dept. Mgr.			
Def. React. Div.			
Chem. Proc. Div.			
Def. Wst. Mgmt. Div.		DEPARTMENT OF ENERGY	
Adv. React. Dev. Div.			
Proj. Dept.			
Environ. Div.		ADDITIONAL	
IRM Dept.			
Facility Rep. (Ops.)			
Other			

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

ECN 605 651





@ Fix

WPS = WHC-W-~~SM~~-CS-1
GT/SM

For re torque, see Sec. B-B.
Also re torque 3/4"ϕ A325 bolts betn. column and beam with 350 Ft. lb

ENGINEERING CHANGE NOTICE

1. ECN 615400

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.		4. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	KR Busching, 87250, T4-03, 373-2106		10/10/94
	5. Project Title/No./Work Order No. Essential Drawing List	6. Bldg./Sys./Fac. No. 2403 WACWC	7. Approval Designator NA
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) See Block 12	9. Related ECN No(s). NA	10. Related PO No. NA

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	NA	NA Cog. Engineer Signature & Date	NA Cog. Engineer Signature & Date

12. Description of Change

Remove the word "ESSENTIAL" from drawing # H-2-131541 sheets 1&2.

Block 8 Continued

H-2-131541 Sh.1 Rev.2
H-2-131541 Sh.2 Rev.1

13a. Justification (mark one)	Criteria Change [X]	Design Improvement []	Environmental []
As-Found []	Facilitate Const. []	Const. Error/Omission []	Design Error/Omission []

13b. Justification Details

These drawings are not considered essential drawings and are not on the Essential or Support drawing lists for the Central Waste Complex.

14. Distribution (include name, MSIN, and no. of copies)

KR Busching, T4-03, 1 DH Matheny, T4-03, 1
Release Stations: 3,~~8~~4,20; 1 ea
Sta 3 S2-05
Sta 4 R1-29
Sta 20 T4-00

RELEASE STAMP

OFFICIAL RELEASE BY WHC 12
DATE OCT 20 1994
Sta #6

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) 615400

15. Design Verification Required	16. Cost Impact						17. Schedule Impact (days)	
	ENGINEERING			CONSTRUCTION				
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]
[X] No	Savings	[]	$	Savings	[]	$	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[] NA	Inventory Adjustment Request	[] NA		[] NA

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
NA	NA	NA

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. LJ Gaschott *L J Gaschott*	10/11/94	PE	
Cog. Mgr. DB Powell *DB Powell*	10/11/94	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other		Other	
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

APPENDIX
4B

APPENDIX 4B

SECONDARY CONTAINMENT CALCULATIONS

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APPENDIX 4B

SECONDARY CONTAINMENT CALCULATIONS

Flammable and Alkali Metal Waste Storage Modules

The Flammable and Alkali Metal Waste Storage Modules have secondary containment (spill containment) ranging from 1,500 to 7,600 liters, depending on the manufacturer. Inspection aisle space of 76 centimeters or greater is required. Stacking of containers larger than 208-liters is not allowed.

As discussed in Chapter 4.0, Section 4.1.1.1, any liquid must be packed with material capable of absorbing twice the volume of the liquid in the same container. The maximum amount of properly stored liquid in a 208-liter container is 57 liters.

Under these conditions, it is considered improbable to exceed the retention capacity of the secondary containment (sump) in any storage module. Manufacturer and containment capacity for each storage module are listed as follows.

Flammable Waste (FW) and Alkali Metal Waste (AMW) Storage Modules:

Module no.	Length (meters)	x	Width (meters)	x	Sump depth (meters)	=	Secondary containment (liters)
AMW-1	7.6		2.7		0.13		2,700
AMW-2	7.5		3.0		0.15		3,400
AMW-3	7.7		2.7		0.13		2,700
AMW-4	7.5		3.0		0.15		3,400
FW-01	6.6		2.3		0.13		2,000
FW-02	6.6		2.3		0.13		2,000
FW-03	10.3		3.7		0.20		7,600
FW-04	4.8		3.8		0.18		3,300
FW-05	7.4		2.6		0.18		3,500
FW-06	7.4		2.6		0.18		3,500
FW-07	7.4		2.6		0.18		3,500
FW-08	4.8		3.8		0.18		3,300
FW-09	7.4		2.6		0.18		3,500
FW-10	7.4		2.6		0.18		3,500
FW-11	7.4		2.6		0.18		3,500
FW-12	7.4		2.6		0.18		3,500

Module no.	Length (meters)	x	Width (meters)	x	Sump depth (meters)	=	Secondary containment (liters)
FW-13	4.8		3.8		0.18		3,300
FW-14	10.3		3.7		0.20		7,600
FW-15	7.4		2.6		0.18		3,500
FW-16	7.5		3.1		0.18		4,200
FW-17	7.5		3.1		0.18		4,200
FW-18	7.5		3.1		0.18		4,200
FW-19	7.0		2.6		0.18		3,300
FW-20	7.0		2.6		0.18		3,300
FW-21	7.7		2.7		0.15		3,100
FW-22	7.7		2.7		0.15		3,100
FW-23	7.7		2.7		0.15		3,100
FW-24	7.7		2.7		0.15		3,100
FW-25	7.7		2.7		0.15		3,100
FW-26	7.6		1.3		0.15		1,500
FW-27	7.6		1.3		0.15		1,500

Waste Storage Buildings (2401-W, 2402-W, and 2402-WB through 2402-WL)

The 2401-W and 2402-W Waste Storage Buildings (2402-W and 2402-WB through 2402-WL) all have the same square footage and all have a 15.2-centimeter-high curb for secondary containment. The containment capacity is determined by the capacity of the curbed volume minus a ramp volume, calculated as follows:

Curb volume = 24.2 m x 15.0 m x 0.15 m = 54.4 m^3

Ramp volume = 2[{.5 x (7.17 m x 2.44 m x 0.15 m)}
+ (7.17 m x 0.714 m x 0.15 m)] = 4.2 m^3

Total volume = 54.4 m^3 - 4.2 m^3 = 50.2 m^3 = 50,200 liters.

2403-WA through WC Waste Storage Buildings

The 2403-WA through WC Waste Storage Buildings are 51.8 meters wide and 61 meters long and are divided into four quadrants. Each quadrant is divided by approximately 12.7-centimeter-high concrete curbs that slope toward a sump. The following calculations are for the secondary containment system:

Volume of containment = volume of floor + volume of sump

Volume of floor =

{[11.3 m x 0.13 m x 1/2] + [11.3 m x 0.10 m x 1/2] +
[13.1 m x 0.025 m]}28.8 m = 46.8 m^3

Volume of sump = (0.61 m x 0.61 m x 0.46 m) = 0.17 m^3

Total for quadrant = 46.8 m^3 + 0.2 m^3 = 47.0 m^3

Secondary containment capacity for one quadrant = 47,000 liters

Total secondary containment for the 2403-WA, 2403-WB, or 2403-WC =
4 x 47,000 liters = 188,000 liters.

2403-WD Waste Storage Building

The 2403-WD Waste Storage Building is 51.8 meters wide and 99.1 meters long and is divided into four quadrants. Each quadrant is divided by approximately 12.7-centimeter-high concrete curbs that slope towards a sump. The following calculations are for the secondary containment system:

Volume of floor =

{[11.3 m x 0.13 m x 1/2] + [11.3 m x 0.10 m x 1/2] +
[13.1 m x 0.025 m]} 47.8 m = 77.8 m^3.

Volume of sump = (0.61 m x 0.61 m x 0.46 m) = 0.17 m^3

Total for quadrant = 77.8 m^3 + 0.2 m^3 = 78.0 m^3

Secondary containment capacity for one quadrant = 78,000 liters

Total secondary containment for the 2403-WD =
4 x 78,000 liters = 312,000 liters.

2404-W Waste Storage Buildings

The 2403-W Waste Storage Buildings are 36.6 meters wide and 54.9 meters long and are divided into two equal sections. Each section is surrounded by 15.2-centimeter high concrete curbs that slope toward a central sump. The following calculations are for the secondary containment system.

Volume of containment = volume of curb + volume of sloping floor +
volume of sump.

Volume of curb = (36.3 m x 27.3 m x 0.15 m) = 148.6 m^3

Volume of sloping floor =

{[36.3 m x 27.3 m] + [0.61 m x 0.61 m]} / 2 x 0.14 m = 69.4 m^3

Volume of sump = (0.61 m x 0.61 m x 0.61 m) = 0.23 m^3

Total for section = 148.6 m^3 + 69.4 m^3 + 0.2 m^3 = 218 m^3

Secondary containment capacity for one section = 218,000 liters

Total secondary containment for the 2404-WA, 2404-WB, or 2404-WC =
2 x 218,000 liters = 436,000 liters.

Waste Storage Pad

The Waste Storage Pad is 27 meters wide by 30 meters long and is curbed with 15.2 centimeters of concrete. The pad slopes 14 centimeters to a center trench running the length of the pad. The following calculations are for the secondary containment system.

Total volume = volume from curbs + volume from trench

Volume from curbs = {(27 m x 0.15 m) + (27 m x 0.14 m x 0.5)} x 30.2 m = 179 m^3

Volume of trench = 0.30 m x 0.41 m x 30.2 m = 3.7 m^3

Total volume = 179 m^3 + 4 m^3 = 183 m^3 = 183,000 liters.

Rainfall Calculations

A maximum 25-year 24-hour rainfall event will produce less than 5 centimeters of rain in a 24-hour period. The following calculations demonstrate that the Waste Storage Pad secondary containment system is capable of holding the volume of liquid produced by this type of precipitation event.

Area of Waste Storage Pad = 27 m x 30.2 m = 815 m^2

Volume of rain = 815 m^2 x 0.05 m = 41 m^3

Volume of rain = 41 m^3 = 41,000 liters

Volume of secondary containment is 183,000 liters; therefore, the secondary containment system is capable of handling a 25-year/24-hour rainfall event.

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APPENDIX
4C

APPENDIX 4C

SEALANT PROPERTIES

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Steelcote® Manufacturing Co

CORROSION RESISTANT COATINGS

STEELCOTE MANUFACTURING COMPANY
ONE STEELCOTE SQUARE
ST. LOUIS, MO. 63103-2880
(314)771-8053
FAX(314)771-7581

August 1, 1996

FAX COVER LETTER

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: PATRICK LEEWENS

FIRM: LEWEENS CORPORATION

FAX NUMBER: 206-842-7699

NAME: GREG S. NIEDT

RE: CONTRACT NO. KH-5507 (W-112) ICF KAISER LTR 7/31/96 TO GARCO

TOTAL NUMBER OF PAGES INCLUDING THIS PAGE: 3

IF YOU DO NOT RECEIVE ALL OF THE PAGES, PLEASE CALL US BACK AS SOON AS POSSIBLE AT 314-771-8053. THANK YOU.

****

DEAR PAT:

ACKNOWLEDGING YOUR FAX OF 7-31-96. THE PRODUCT DATA SHEET ATTACHED SHOWS TEMPERATURE LIMITATIONS THAT WE SUGGEST FOR USE OF THE COLORTOP BOTH LOW AND HIGH. THESE ARE GUIDELINES FOR UNSKILLED APPLICATORS WHO MAY NOT HAVE THE NECESSARY SKILLS TO WORK WITH THE PRODUCT. THEY ARE DESIGNED TO PREVENT CRATERS OR GAS BUBBLING AND/OR PREMATURE HARDENING WITHOUT LAYING OUT PROPERLY. THE IMPORTANT THING IS THAT THE PRODUCT SELF-LEVELS AND HARDENS PROPERLY. SKILLED APPLICATORS CAN INSTALL AND PROPERLY CURE THE PRODUCT OFTEN WITHOUT THE NECESSITY OF THESE RESTRICTIONS.

TILE-X 3000 CONTAINS A THIXOTROPE TO HOLD ON VERTICAL SURFACES. AEROSIL IS A COMMON THIXATROPE. THEREFORE WHEN INCLUDED IN COLORTOP IT WILL HOLD ON A LIMITED HEIGHT OF VERTICAL SURFACE SUCH AS CURBS AND COVE BASES. WE SUGGEST ONLY ENOUGH TO HOLD COLORTOP AT THE DESIRED THICKNESS.

WE THINK WALL-NU IS EASIER TO USE BUT YOU MAY SUBSTITUTE COLORTOP MIXED WITH AEROSOL TO REPLACE AMERON 114A WHICH CONTAINS A SIMILAR THIXATROPE (SILICON DIOXIDE) FOR PATCHING PURPOSES.

SINCERELY,

STEELCOTE MANUFACTURING COMPANY

Greg Niedt

GREG S. NIEDT
VICE PRESIDENT, SALES/MARKETING

GSN:fr

ENCLOSURE: PRODUCT DATA SHEET - COLORTOP

CC: FRANK ETTER 509-535-1384
J. J. TORTORICI 509-373-6259

Leewens Corporation
P.O. BOX 10029
BAINBRIDGE ISLAND, WASHINGTON 98110
PHONE (206) 842-7661 FAX (206) 842-7699

7/31/96

Jay Buck
Garco Construction
On Site 200 West
Hanford Nuclear Reservation
Richland, WA 99352
Via Fax (509) 373-6259

Dear Jay:

RE: Thickness of Special Coatings

Each day we will keep a log of square footages coated and materials used within that area. This, in addition to invoices and total square footage at the end of the job will ensure that the correct amount of material is used to achieve 50 mil thickness. This as well as our approved application procedure will be used to determine that we have obtained 50 mil thickness.

The formula is as follows:

1600 mil square feet per gallon X number of gallons used ÷ by square feet = Millage of material used.

In addition to this the amount of material used as a base coat will expand by 200-250%. As a minimum therefore, we can add the millage used as the base coat twice, so this needs to be added in once again. Therefore, the millage used as the basecoat X 2 + millage used for the topcoat = final finished thickness.

Also, please refer to approved application procedures. Thank you.

Sincerely,

Pat Leewens
for Patrick F. Leewens
PFL/tml

LEEWENS CORPORATION

P.O. Box 10029
Bainbridge Island, WA 98110
(206) 842-7661
Fax: (206) 842-7699

July 18, 1996

Jay Buck
Garco Construction
Via Fax (509) 373-6259

Dear Jay,

Re. W112 Enhanced Radioactive and Mixed Waste Storage
200 West Area
Richland, WA 99352
Garco Project #9555

Here is our application procedure for the special floor coating:

1. Prepare surface of floor by steelshotblasting.
2. Apply Steelcote Monomid Primer by roller, at rate sufficient to saturate surface of concrete but not leave puddles or dry spots.
3. Fill cracks and holes with Steelcote Wall-Nu or Colortop mixed with thixotrope.
4. Apply Colortop basecoat at 15-20 mils by cerrated squeegee and broadcast to excess with 16/36 Green Diamond aggregate. Allow to cure.
5. Remove excess aggregate. Apply 15 mil Colortop topcoat by flat blade squeegee and backroll.

Total system thickness is 50 mils with nonskid finish per approved sample mockup. 2838/10AK

Please let me know if I can answer any additional questions.

Sincerely,

Patrick F. Leewens
PFL/francis

Steelcote® Manufacturing Co.

CORROSION RESISTANT COATINGS

STEELCOTE MANUFACTURING COMPANY
ONE STEELCOTE SQUARE
ST. LOUIS, MO. [illegible]
(314) 771-[illegible]
FAX (314) 771-[illegible]

September 17, 1992

Mr. Patrick Leewens
Leewens Engineering
255 169th Avenue NE
Bellevue, WA 98008

To Whom It May Concern:

Leewens Engineering is certified as a competent applicator of the following Steelcote Products: Wall-Nu, Colortop, Epo-Lux 121, and related Steelcote Products. This certification is given to include LeeWens present application personnel. Such endorsement by Steelcote does not relieve Leewens and their personnel from following all directions on manufacturers printed literature, including applicable Product Data Sheets. Any approved deviation from such instructions shall be confirmed in writing by an officer of Steelcote.

Sincerely,

STEELCOTE MANUFACTURING COMPANY

Douglas A. Niedt

Douglas A. Niedt, President
N.A.C.E. Corrosion Specialist #768

DAN:fr

LETTERS\LEEWENS

Steelcote® Manufacturing Co.

ENGINEERING SERVICE

PDS No.0428
MONOMID CLEAR SEALER

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2880 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Waterborne Adduct Cured Epoxy

PRODUCT DESCRIPTION: Monomid is a two-component, water borne, epoxy sealer designed to seal and deeply penetrate concrete or masonry locking in loose aggregate on top and forming a hard, unpenetratable sub-surface. Monomid Sealer possesses a water-thin viscosity, allowing it to penetrate into concrete as much as 1/4 inch. May be applied on new concrete when surface moisture has dissipated as a combination curing compound and sealer/primer. Monomid sealer does not require etching when installed on "green" concrete. When applied to aged and etched concrete, it may be applied to the damp surface. Monomid Intermediate and Finish may be applied as well. Thereby, downtime is reduced. Monomid Sealer is in compliance with the requirements of U.S. Department of Agriculture for use in food packaging and processing operations. It may be used alone as a sealer or in conjunction with Monomid Intermediate, Monomid Finish, Colortop, or other approved Steelcote systems as a primer. There are no explosion, fire, or pollution hazards and no gassing problems. Monomid has very low application odor.

RECOMMENDED FOR: Used especially in food-processing and packaging plants, clean room, hospitals, and breweries. As a clear, penetrating sealer for concrete or masonry surfaces. Designed to protect concrete against moisture, freeze/thaw cycles, salts, oils, and specific chemicals, helps keep dusting down and aids in the cleanability of floors or walls while increasing the life of the concrete. May be used as a sealer under Monomid and other epoxy or polyurethane coatings for excellent resistance to aircraft hydraulic fluids, gasoline, and oil spillage. This updated formula is excellent for airport hangar and other flooring applications where a low V.O.C. is required. Abrasion resistance is 42.9 mg. (ASTM D4060, CS-17 wheel, 1000 cycles 1 kg. Taber Abraser)

NOT RECOMMENDED FOR: Class I potable water immersion. Do not apply below 40°F and rising to above 50°F.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Good - Very Good Alkali: Excellent Salts: Very Good Solvent: Good - Excellent Water: Excellent
Aviation Products: (No effect 9 day immersion)	Skydrol LD4 and 500B, Aviation Gas, Dirty Engine Oil, Gasohol
VOLUME SOLIDS:	30% +/- 2%
WEIGHT SOLIDS:	32% +/- 2%
MIX RATIO, WEIGHT:	100 Parts B to 26.7 Parts A
MIX RATIO, VOLUME:	4 Parts B to 1 Part A
FLASH POINT:	> 200°F.
POT LIFE:	Up to 4 hours
SHELF LIFE:	1 Year, Minimum
INDUCTION TIME:	1 Hour
APPLICATION TEMPERATURE:	50° - 90°F. (10° - 32°C.)
THINNER - REDUCTION:	Water
THINNER - CLEAN UP:	Water or Steelcote T-201
SERVICE TEMPERATURE:	250°F. (121°C.) Maximum
GLOSS:	Gloss
COLOR:	Clear
PACKAGING:	1 gal. kits and 5 gal. kits
WEIGHT PER GALLON:	8.65 lbs. (3.9 kg) ± 2%
V.O.C. (Volatile Organic Compound):	.65#/gal, .78 g/l mixed

COVERAGES

THEORETICAL COVERAGE:
480 square feet per gallon at 1 mil DFT (allow for application losses)

RECOMMENDED WET FILM THICKNESS:
6.5 mils (150.5 microns)

RECOMMENDED DRY FILM THICKNESS:
1 - 2 mils (50 microns)

DRYING TIME
@ 77°F. (25°C.) 40% RH

TO TOUCH:	3 Hours
TO RECOAT:	3 - 4 Hours
FINAL CURE:	7 Days

RECOMMENDED FINISHES

CONCRETE FLOORS & MASONRY:
Monomid Semi-Gloss or Gloss, Colortop, BFB, Epo-Floor Top, Self-Priming when used as a clear sealer

SURFACE PREPARATION

CONCRETE OR MASONRY: For proper bonding, apply over a clean, sound surface. For new construction, Monomid may be installed directly to "green" concrete without etching or aging. The only requirement is that the surface temperature be 50°F and rising. All laitance or loose bound concrete should be removed and the surface cleaned leaving a hard, bound substrate preferably by dry abrasive blasting. "Sweep" abrasive blasting is the most effective method of surface preparation. For old concrete, or if dry abrasive blasting is not possible, the concrete may be prepared by acid etching with Steelcote Clean & Etch per label instructions. After etching, neutralize concrete with a solution of two (2) cups aqua ammonia per five (5) gallons of water. Flush clean with water and allow to dry thoroughly. If oil or grease stains exist after etching, clean areas by scrubbing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush clean with water and allow to surface dry.

Apply Monomid Clear Sealer per label instructions. Allow one hour induction time after mixing. If Monomid Clear Sealer is to be used as a primer, for best adhesion, apply the appropriate topcoat while the Monomid Clear Sealer is still tacky (normally within ten hours). If the Monomid Clear Sealer is permitted to dry (and topcoating is still desired) and if any "blush" or residue exists on the surface, remove by either wiping with isopropyl alcohol or washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. If washing with TSP solution, flush with water and allow to dry. If no "blush" or residue exists, it is not necessary to clean the surface and primer and topcoat may be applied within 24 hours maximum after application at 77°F. and 40% relative humidity. If more than 24 hours have elapsed between coats, the floor must be solvent worked and sanded dull and vacuumed clean to achieve proper adhesion of subsequent coats. Monomid Semi-Gloss Intermediate Primer should be applied over this sealer if a color topcoat is to be applied in order to avoid "mirror pick-up" of concrete hairline cracks and other imperfections of concrete. Clean all tools and equipment with Steelcote T-201 after use.

NOTE: Do not "puddle" Monomid Clear Sealer on the surface. When used as sealer only, apply at least two coats for best results.

APPLICATION EQUIPMENT

BRUSH: Use a clean, nylon bristle brush. No reduction necessary.

ROLL: Use a clean, short nap, mohair roller with a phenolic core. No reduction necessary.

OTHER: On smooth concrete, may be applied by E-Z Paintr® Flat Applicator.

CONVENTIONAL SPRAY

Gun:		Binks 18 or equal
Fluid Nozzle:		68
Air Nozzle:		68 PB
Air Hose ID:		1/4"
Material Hose ID:		3/8"
Needle:		68
Pressure:	Pot:	10 - 15 psi
	Atomization:	30 - 45 psi

Use moisture and oil traps.
No reduction necessary.

AIRLESS SPRAY

Pump Ratio:	28:1
Gun:	Graco 208-327 or equal
Tip Size:	0.017 - 0.019
Fan Size:	6" - 8"
Pressure:	2000 - 2500 psi
Material Hose ID:	1/4"

No reduction necessary.

1095

Steelcote® Manufacturing Co.

ENGINEERING SERVICE

PDS No. 0427

MONOMID EPOXY HI-BUILD

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2880 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Waterborne Adduct Cured Epoxy

PRODUCT DESCRIPTION: Monomid is a very tough, durable, water reducible epoxy coating designed for use in areas where an attractive, easily cleanable, high-gloss or semi-gloss finish is desired. Formulated with water reducible epoxy resins, Monomid complies with FDA Title 21, Section 175.300 for use in food processing and packaging facilities and is U.S.D.A. approved for incidental food contact. Formulated for spray, brush or roll application, it possesses excellent flow and leveling and dries to an abrasion-resistant, tile-like finish. Monomid is water-thinned and has easy water clean-up. No explosion, fire, or pollution hazard and no gassing problems. Monomid has very low odor and wide custom color availability. Monomid Hi Build Semi-Gloss may be used as a finish coat or as an intermediate coat over Monomid Clear Sealer for finishing floors subject to chemical exposures as well as heavy traffic.

RECOMMENDED FOR: Application for use on walls, ceilings, concrete floors, equipment and structural steel especially in food-processing and packaging plants, clean room, hospitals, and breweries. This updated formula is excellent for airport hangar and other flooring applications where a low V.O.C. is required. Abrasion resistance is 42.9 mg. (ASTM D4060, CS-17 wheel, 1000 cycles 1 kg. Taber Abraser)

NOT RECOMMENDED FOR: Class I potable water immersion. Do not apply below 40°F and rising to 50°F. Exterior use without chalk resistant topcoat if dull apppearance is objectionable.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids:	Good to Very Good
	Alkali:	Excellent
	Salts:	Very Good
	Solvent:	Good to Excellent
	Water:	Excellent
Aviation Products: (No effect 9 day immersion)		Skydrol LD4 and 500B; Aviation Gas, Dirty Engine Oil, Gasohol
VOLUME SOLIDS:		Semi-Gloss: 46% +/- 2%
WEIGHT SOLIDS:		Semi-Gloss:65%+/-2%
MIX RATIO, WEIGHT:		100 Pts.B : 17.27 Pts.A
MIX RATIO, VOLUME:		4 Pts.B to 1 Pt.A
FLASH POINT:		> 200°F.
APPLICATION LIFE:		Up to 4 Hours
SHELF LIFE:		1 Year, Minimum
INDUCTION TIME:		60 Minutes
THINNER - REDUCTION:		Water
THINNER - CLEAN UP:		Water or Steelcote T-201
APPLICATION TEMP:		50°-90°F. (10°-32°C.)
SERVICE TEMP:		250°F. (121°C.) Max.
GLOSS:		Hi-Build Semi-Gloss
COLOR:		White
PACKAGING:		1 gal. & 5 gal. kits
WEIGHT PER GAL:		12.39 lbs.(5.5 kg) ± 2%
V.O.C. (Volatile Organic compound)		.77#/gal., 92 g/l

COVERAGES

THEORETICAL COVERAGE:
147 square feet per gallon at 5 mils DFT
(allow for application losses)

RECOMMENDED WET FILM THICKNESS:
11 mils (275 microns)

RECOMMENDED DRY FILM THICKNESS:
Hi-Build Semi-Gloss: 5 mils (125 microns)

DRYING TIME
@ 77°F. (25°C.) 40% RH

TO TOUCH:	3 Hours
TO RECOAT:	3 - 4 Hours
FINAL CURE:	7 Days

RECOMMENDED PRIMERS

TO STEEL: Monomid Metal Primer or Speedepoxy

TO CONCRETE FLOORS:
Monomid Clear Sealer or Monomid Hi-Build Semi-Gloss

TO CONCRETE BLOCK WALLS:
Self priming. Fill with two coats Corite Block Filler or Wall-Nu

3

SURFACE PREPARATION

CONCRETE OR MASONRY: For proper bonding, apply over a clean, dry, sound surface. For new construction, allow the concrete to cure a minimum of twenty-eight (28) days at 60°F. before coating. Concrete should have a maximum moisture content of ten (10) percent. All laitance or loose bound concrete should be removed and the surface cleaned leaving a hard, bound substrate preferably by dry abrasive blasting. "Sweep" abrasive blasting is the most effective method of surface preparation. For old concrete, or if dry abrasive blasting is not possible, the concrete may be prepared by acid etching with Steelcote Clean & Etch per label instructions. After etching, neutralize concrete with a solution of two (2) cups aqua ammonia per five (5) gallons of water. Flush clean with water and allow to dry thoroughly. If oil or grease stains exist after etching, clean areas by scrubbing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush clean with water and allow to dry thoroughly.

Apply Monomid Clear Sealer per label instructions. Allow one hour induction time after mixing. If Monomid Clear Sealer is to be used as a primer, for best adhesion, apply the appropriate topcoat while the Monomid Clear Sealer is still tacky (normally within ten hours). If the Monomid Clear Sealer is permitted to dry (and topcoating is still desired) and if any "blush" or residue exists on the surface, remove by either wiping with isopropyl alcohol or washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. If washing with TSP solution, flush with water and allow to dry. If no "blush" or residue exists, it is not necessary to clean the surface and primer and topcoat may be applied within 24 hours maximum after application at 77°F. and 40% relative humidity. If more than 24 hours have elapsed between coats, the floor must be solvent washed, sanded dull, and vacuumed clean to achieve proper adhesion of subsequent coats. Monomid Hi-Build Semi-Gloss Intermediate Primer should be applied over this sealer if a topcoat is to be applied in order to avoid 'mirror pick-up' of concrete hairline cracks and other small imperfections of concrete. Clean all tools and equipment with Steelcote T-201 after use.

NOTE: Do not "puddle" Monomid Clear Sealer on the surface. When used as sealer only, apply at least two coats for best results.

TO STEEL: Surface must be clean and free from oil, grease, wax, loose rust, and foreign matter. Surface should be degreased by solvent wiping with Steelcote T-181 in accordance with SSPC-SP1 specification. Remove any existing loose rust, mill scale, or foreign matter by hand or power tool cleaning in accordance with SSPC-SP2 or SSPC-SP3 specification. For more severe environments, surface should be dry abrasive blasted to a commercial finish (SSPC-SP6 specification). If any grease, oil, or wax is present prior to blasting, remove by solvent wiping (SSPC-SP1 specification). Dry abrasive blast in order to remove at least two-thirds (2/3) of all visible rust, mill scale, paint, and other foreign matter from each square inch of surface. Blast to a 1 1/2 - 2 mill profile for proper adhesion. After sandblasting, remove all sand, dust, and grit by sweeping and/or vacuuming. Apply Speedepoxy or other recommended primer per label instructions as soon as possible after sandblasting and always before any flash rusting can occur. Topcoat at the appropriate time with a Steelcote recommended finish coat. Clean all tools and equipment with a Steelcote ...mmended thinner after use.

APPLICATION EQUIPMENT

BRUSH:	Use a clean, nylon bristle brush. Reduce with tap water 10-15% as necessary.
ROLL:	Use a clean, short nap, mohair roller with a phenolic core. Reduce with tap water 10-15% as necessary.
OTHER:	On smooth concrete, may be applied by E-Z Paintr^ Flat Applicator.

CONVENTIONAL SPRAY

Gun:		Binks 18 or equal
Fluid Nozzle:		68
Air Nozzle:		66 PB
Air Hose ID:		1/4"
Material Hose ID:		3/8"
Needle:		68
Pressure:	Pot:	10 - 15 psi
	Atomization:	30 - 45 psi

Use moisture and oil traps.
Reduce 10-15% with tap water as necessary.

AIRLESS SPRAY

Pump Ratio:	28:1
Gun:	Graco 208-327 or equal
Tip Size:	0.017 - 0.019
Fan Size:	6" - 8"
Pressure:	2000 - 2500 psi
Material Hose ID:	1/4"

Reduce 10-15% with tap water as necessary.

1095

4

Steelcote® Manufacturing Co. ENGINEERING SERVICE

PDS No. 0787
COLORTOP

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2880 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Amine Adduct Cured Epoxy

PRODUCT DESCRIPTION: Steelcote Colortop is a 100% solids resin formulated to have a "Honey-like" viscosity that when mixed and spread on a floor self-levels at 15 - 30 mils. The clear is near water-white in color and forms a very dense, abrasion and early 12-hour mar resistant coating able to tolerate high volume traffic, chemicals, water, and ultra violet exposure with little of no degradation except slight color changes.

RECOMMENDED FOR: Colortop is a highly versatile resin used as a floor coating either clear or pigmented, as a casting resin or as a binder for 3M Colorquartz® and other architectural aggregate such as exposed aggregate walks. Colortop is recommended for concrete, masonry, and wood surfaces with appropriate primers. It has also been used for coating plastics and steel, when properly primed. For exterior application may be top-coated with Steelcote's MCU 3540, Epo-Lux 595, or Epo-Lux 600 Clear to assure chalk resistance and minimize color drift. Write for detailed information for use with large aggregates for exposed aggregate sidewalks, patios, etc., or for use with 3M Colorquartz® aggregates, non-skid aggregates, or for use as a trowel-on flooring.

NOT RECOMMENDED FOR: Do not apply at temperatures below 40°F and rising or above 95° F. Surface temperature may not exceed 75°F.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Good - Excellent Alkali: Good - Excellent Salts: Excellent Solvent: Good - Excellent
VOLUME/WEIGHT SOLIDS:	99.8% +/- 1/2% (Trace)
VISCOSITY:	Syrup-Self Leveling
FLASH POINT:	>200°F. (93°C.)
MIX RATIO, WEIGHT:	84.25 Parts A to 100 Parts B
MIX RATIO, VOLUME:	1 Part A to 1 Parts B
POT LIFE:	60°F.30-45 Min. Max./2 Gl Mix 77°F.20-30 Min. Max./2 Gl Mix 85°F. 7-10 Min./2 Gal. Mix
INDUCTION TIME:	None
SHELF LIFE:	2 Years, Minimum
THINNER - REDUCTION:	Diluent A
THINNER - CLEAN UP:	Steelcote T-184
APPLICATION TEMP:	50° - 90°F. (10° - 32°C.)
SERVICE TEMPERATURE:	300°F. (148.8°C.) Dry 180°F. (82.2°F.) Immersion
GLOSS:	High Gloss
COLOR:	Water White Clear & Lt Gray. Other colors on special order
PACKAGING:	2 gal. and 10 gal. units
WEIGHT PER GALLON:	8.89 lbs (3.94 kg) ± 2%
V.O.C. (Volatile Organic Compound):	1 g/l or less

COVERAGES

THEORETICAL COVERAGE: 160 sq. ft. per gal. at 10 mils DFT (Profile of surface preparation causes thickness variations. Allow for application losses)

RECOMMENDED WET FILM THICKNESS: 10 - 32 mils (250 - 800 microns)

RECOMMENDED DRY FILM THICKNESS: 10 - 32 mils (250 - 800 microns)

DRYING TIMES

@ 77°F. (25°C.), 50% RH

TO TOUCH:	2 Hours
TO RECOAT:	4 Hours
FOR TRAFFIC:	8-12 Hours
FINAL CURE:	7 - 12 Days

RECOMMENDED PRIMERS

WOOD: Self priming. Only one coat 8 -15 mils normally sufficient.

CONCRETE: Epo-Lux 121 PS or Monomid Clear Sealer when acid etched with Clean & Etch. Speedepoxy SY-1 White or Monomid High-Build Intermediate over other coatings or silicate hardeners that cannot be removed. Use Wall-Nu to fill holes & cracks. Monomid Clear Sealer has lowest odor and VOC.

TOPCOATS (EXTERIOR OR INTERIOR): Epo-Lux 595; Epo-Lux 600; MCU 3540

SURFACE PREPARATION

CONCRETE: New concrete should be well cured (28 days at 70°F), free of all sealing and hardening compounds, and any other contaminants as oil, grease and chemicals. Old cement shall be clean and free of the same as above plus old coatings and paints. Shot blasting to a 3-5 profile is the recommended method of surface preparation. Acid etching is approved with Steelcote Clean & Etch followed by neutralizing with aqua ammonia in water (2-3 cups per 5 gallons of water). Double etch with Clean & Etch only to 100 mesh sandpaper profile. Do not use muriatic acid solution! Clean & Etch contains proper balance of phosphoric and muriatic acid to etch without damage to floor! Concrete surfaces must be free of hydrostatic pressure. Application may be made to a damp, uncured concrete floor if Monomid Clear Sealer is applied first and allowed to dry. Do not apply over curing agents, hardeners, oil, grease, or other intervening barriers. If applying over Epo-Lux 121 or Monomid Clear Sealer, apply when sealer is slightly tacky to assure chemical bond. If sealer is allowed to dry, sanding is required before application of Colortop. Use Steelcote Wall-Nu to fill holes and cracks. Sand smooth before applying Color-Top.

WOOD AND PLYWOOD: These surfaces shall be clean, free of dirt, oil, grease and other contaminants. Loose boards shall be re-nailed or screwed and counter-sunk. Rot or severe contamination shall be cut out to sound surface and repaired with new wood or filled with Steelcote Color-Top. The surface shall be machine sanded to a smooth, open-pored state. Apply Colortop over Monomid Clear Sealer or Epo-Lux 112 Deep Penetrating Sealer.

STEEL: Consult Steelcote's Technical Service Department.

MIXING AND APPLICATION FOR USE AS A COATING: Do not attempt to mix the material if it has been stored in a cold area for a period of time. The material must be warmed to room temperature(at least 65°F.) so that easier mixing can be obtained. Material can be warmed to 65°F.by sitting in warm water or a warm room for a period of time. Warming the material reduces the viscosity to the proper consistency for thorough mixing and easy application. Do not mix more than one two gallon unit at a time for best results, but if application is being accomplished be more than one person two, two-gallon units may be mixed. Mixing of quantities of one, two-gallon unit or more shall be accomplished on a 30 RPM, "KOL" or equivalent small paste or cement mortar mixer of 5-gallon capacity or more. Mixing with a paddle or jiffy-type mixer or by hand is not recommended except as part of the KOL mixing.. Prestir both components to assure uniform color. Use a perforated blade in the KOL Mixer and mix on the basis of one Part A to one Part B. Mix 3 minutes by the clock blending vertically with the slow speed Jiffy mixer and continuously scraping the sidewalls of the mixing container. At the end of 3 minutes, stop, and transfer the mix to a separate, clean 5-gallon can scraping down the sidewalls and the mixing blade to make sure all material is in the first can, then pour down the center of the second can. Re-mix for one minute.

CONTROLS: To avoid having unmixed or partially mixed batches that can result in uncured wet spots or partially cured "tacky" or soft spots it is necessary to have close mixing checks for each batch. Take a 2 to 3-ounce sample of each mix after completion of mix in a wax cup. Write the time of mix on a tongue depressor placed in each cup. If material in cup does not set up or begin to set up and/or become warm or hot in one hour at 75 degrees Fahrenheit STOP THE APPLICATION. If possible, put the sample in an oven at 120 degrees Fahrenheit for 10-12 minutes. If material does not harden, remove uncured mixed material from surface and re-evaluate mixing procedures. If oven not available, a shallow pie pan filled with hot tap water can be used to accelerate the cure of control specimen. If material is stored and/or shipped at temperatures above 80°F., it be cooled before mixing to avoid a short pot-life.

APPLICATION: Mixed Colortop shall be poured out on floor immediately after mixing in a snake-like fashion to a pre-measured area equal to the desired mil thickness. Spread evenly with a 14" serrated vinyl squeegee and cross-rolled with a 1/8" mohair roller with a phenolic core. A brush may be used as required around edges. Lightly mist surface with Diluent A or roll over "wet" material with a "porcupine" roller to remove air bubbles, if they form. Keep a wet edge and continue job without interruption until completed or completed to a natural breakpoint.

MIXING AND APPLICATION INSTRUCTIONS FOR NON-SLIP OR SEED-IN COLOR-TOP METHOD:
See Engineering Service Technical Bulletin No. CT-SIM.

MIXING AND APPLICATION INSTRUCTIONS FOR TROWEL IN METHOD ON COLOR-TOP SYSTEM:
See Engineering Service Technical Bulletin No. CT-TOM.

PHYSICAL AND CHEMICAL PROPERTIES: See Engineering Service Technical Bulletin No. CTF.

APPLICATION EQUIPMENT

BRUSH: Use a clean, natural bristle brush.

ROLL: Use a clean, short nap, mohair roller with a phenolic core or E-Z Paintr* Flat Applicator. Material should be spread with Steelcote 14" serrated squeegees and then cross rolled or spread with flat polyurethane applicator and porcupine roller.

*Registered TM - 3M Company

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Steelcote® Manufacturing Co.

ENGINEERING SERVICE

PDS No. 0764 WALL-NU TROWELABLE

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2880 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Amido Amine-Cured Epoxy Mastic.

PRODUCT DESCRIPTION: Wall-Nu Trowelable is a 100% solids, trowelable mastic material suitable for patching, coving, lining, adhesive bonding, and underlayment for construction, maintenance, and marine use. Wall-Nu Trowelable, once properly cured, creates a very strong bond to a wide variety of substrates including wood, concrete, masonry, metal, fiberglass, and even glass. Applied up to 1" thick on vertical surfaces, it is completely non-shrinking, is non-brittle, and has an expansion coefficient similar to concrete. It dries to a hard, water-tight barrier that may be wet-sanded, drilled, or filed if desired. It resists spillage of many acids and alkalies, and is formulated to perform well in corrosive or elevated temperature exposures. An all purpose mastic epoxy, Wall-Nu Trowelable has been found acceptable by the U.S.D.A. for use as a coating for application to structural surfaces where there is a possibility of incidental food contact in food processing or packaging facilities.

RECOMMENDED FOR: May be used for tuckpointing, leveling, coving, patching and resurfacing. Use to alter walls, floor or ceiling topography in order to obtain a smooth or contoured surface. For use in areas where a chemical, water or corrosion resistant barrier is needed for patching and repairing structural cracks, spalls, swimming pools, tanks and secondary containment areas. Withstands water immersion service up to 180°F.

NOT RECOMMENDED FOR: Do not apply in temperature below 50°F. Do not thin material. Not for use in areas subject to flexing or torsion; use Wall-Nu Flexible.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids:	Good
	Alkali:	Excellent
	Salts:	Excellent
	Solvent:	Fair
	Water:	Excellent
VOLUME SOLIDS:		100%
WEIGHT SOLIDS:		100%
MIX RATIO, WEIGHT:		1 Part A to 1 Part B
MIX RATIO, VOLUME:		1 Part A to 1 Part B
FLASH POINT:		>200°F. (93°C.) TCC
POT LIFE:		1 Hour Min. @77°F.(25°C)
SHELF LIFE:		1 Year, Minimum
THINNER - REDUCTION:		Not Recommended
THINNER - CLEAN UP:		Steelcote T-181
APPLICATION TEMPERATURE:		50° - 95°F. (10° - 35°C.)
SERVICE TEMPERATURE:		250°F. (121°C.) Continuous
GLOSS:		Flat
COLOR:		Gray or Off-White
PACKAGING:		1/2, 2 and 10 Gallon Units
WEIGHT PER GALLON:		13.16 lbs(5.98 kg)+/-2%
V.O.C. (Volatile Organic Compound):		0

COVERAGES

THEORETICAL VOLUME COVERAGE:
231 cubic inches per gallon

THEORETICAL AREA COVERAGE:
12.65 sq. ft. per gal. at 1/8" (3,125 microns)
Cove 1" X 1" = 29 linear feet/gallon

MAXIMUM FILM THICKNESS:
1/2" (12,500 microns) per coat without Stop-Flow up to 1" (50,000 microns) vertical with Stop-Flow added. 1"(25,000 microns) for coving.

DRYING TIME

@ 77°F. (25°C.) 50% RH

TO TOUCH:	8 Hours
TO RECOAT:	24 Hours
FOR TRAFFIC:	24 - 48 Hours
FINAL CURE:	7 Days

RECOMMENDED FINISH COATS*

Two-Package Urethane:
Epo-Lux Series Nos. 520, 590, 595 and 600

Epoxy-Polyamide: Epo-Lux Series Nos. 121 and 150

Epoxy-Amine: Epo-Line Series Nos. 161 and 164

* *In severe immersion environments, sanding Wall-Nu Trowelable before topcoating is recommended.*

SURFACE PREPARATION

O CONCRETE OR MASONRY: Allow concrete to cure a minimum of twenty-eight (28) days at 60°F. For proper bonding, apply over a ean, dry, sound surface. Remove any existing oil, grease, wax, dirt, loose or foreign matter by washing with a solution of Tri-Sodium Phosphate 'SP) and warm water. Flush with clean water and allow to dry. Obtain "tooth" and remove any existing laitance on concrete floors by dry abrasive lasting with 30/40 mesh silica sand or etching with a solution of Steelcote Clean & Etch per label instructions. If etching, neutralize with a solution f two (2) cups aqua ammonia per five (5) gallons of water. Flush clean with water and allow to dry thoroughly. For new or clean concrete floors, ry abrasive blasting or etching alone is adequate. For filling or repairing cracks, spalls, or small holes, etching or sandblasting is not needed. Apply /all-Nu Trowelable per label instructions. Topcoat at the appropriate time with the Steelcote recommended finish coat. Clean all tools and equipment ith Steelcote T-181 after use.

'O STEEL: Surface must be clean, dry, sound and free from all oil, grease, wax, loose rust and foreign matter. For steel used in non-immersion ervice, surface should be degreased by solvent wiping with Steelcote T-181 in accordance with SSPC-SP1 specification. Remove any existing loose ust, mill scale, or foreign matter by hand or power tool cleaning in accordance with SSPC-SP2 or SSPC-SP3 specification.

'or severe environments, surface should be dry abrasive basted to a Commercial finish (SSPC-SP6). If any grease, oil, or wax is present prior to ılasting, remove by solvent wiping (SSPC-SP1). Dry abrasive blast in order to remove at least two-thirds (2/3) of all visible rust, mill scale, paint and ther foreign matter from each square inch of surface. Blast to a 2-3 mil profile, minimum, for proper adhesion. After sandblasting, remove all sand, lust and grit by sweeping and/or vacuuming. Apply Wall-Nu Trowelable per label instructions as soon as possible after sandblasting and always ›efore any flash-rusting can occur. Topcoat at the appropriate time with the Steelcote recommended finish coat. Clean all tools and equipment with Steelcote T-181 after use.

ΊΟΤΕ: For immersion environments follow the surface preparation procedures outlined for severe environments. However, dry abrasive blast to a white or near-white finish in accordance with SSPC-SP5 or SSPC-SP10 specification in order to remove all or at least 95% of all rust, mill scale, paint, and other foreign matter from each quare inch of surface. After applying Wall-Nu Trowelable and allowing it to cure, lightly sand the surface before topcoating.

) FIBERGLASS: For proper bonding, apply over a clean, dry, sound surface. Remove any existing oil, grease, wax, dirt, loose or foreign "er by washing with a solution of Tri-Sodium Phosphate (TSP) and warm water. Flush thoroughly with clean water and allow to dry. Abrade ıce by hand or power sanding using 3/0 abrasive or specified sandpaper in accordance with SSPC-SP2 or SSPC-SP3 specification. Remove any dust and wipe with Steelcote T-181 or Toluol. Apply Wall-Nu Trowelable per label instructions. Topcoat at the appropriate time with the Steelcote-recommended finish coat. Clean all tools and equipment with Steelcote T-181 after use.

TO WOOD: Surface must be clean, dry, sound and free from all oil, grease, wax, moisture, loose and foreign matter. Remove surface deposits or sap or pitch by scraping, followed by wiping with Steelcote T-181. Sanding with medium grit sandpaper in accordance with SSPC-SP3 specification is recommended. Apply Wall-Nu Trowelable to the surface per label instructions. Wall-Nu Trowelable may be used to repair loose boards, gaps and holes in wood. Topcoat at the appropriate time with Steelcote recommended finish coat.

APPLICATION EQUIPMENT

TROWEL: Use a clean, stainless steel trowel or spatula of the desired shape or dimensions necessary. A flatmixing board is recommended for proper mixing. Steelcote T-212 Trowelling Liquid may be used for finaltrowel finish for easier, faster, and smoother application.

Steelcote® Manufacturing Co.

ENGINEERING SERVICE

PDS No. 0767

TILE-X 3000

ONE STEELCOTE SQUARE • ST. LOUIS, MO 63103-2880 • (314) 771-8053 • FAX (314) 771-7581

SELECTION DATA

GENERIC TYPE: Aliphatic Epoxy - 100% Solids

PRODUCT DESCRIPTION: Tile-X 3000 is a highly specialized coating designed to furnish a dense (vapor permeability .644 mgs/cm^2/mil), chemically resistant, color-stable film. It is useful when a particularly color fast, odorless epoxy barrier coating is desired. Tile-X 3000 complies with FDA Title 21, Section 175.300 for use in food processing and packaging facilities. Formulated primarily for spray application, it possesses excellent flow and leveling characteristics and dries to an 8-12 mil abrasion resistant, anti-graffiti, tile-like finish. Unlike conventional epoxies, exterior gloss retention is excellent and approaches the gloss retention of aliphatic urethanes for exterior exposure and is an excellent substitute for polyurethane finishes when application must be made in areas where, during application, high humidities may be encountered. Tile-X 3000 meets all low V.O.C. requirements, and contains no isocyanates or other airborne irritants.

RECOMMENDED FOR: Application for use on walls, ceilings, secondary containment, some floors, equipment, and structural steel especially in food processing and chemical plants. Does not discolor under Mercury vapor lights. Excellent coating for tank exteriors and interiors, and areas where a high gloss, non-yellowing, chalk resistant finish is desired. Excellent for lining large aquariums, swimming pools, or as a marine coating for fiberglass surfaces above and below the water-line.

NOT RECOMMENDED FOR: DO NOT APPLY at air and surface temperatures below 50°F and rising.

PHYSICAL PROPERTIES

RESISTANCE TO: (Splash & Spillage)	Acids: Fair to Very Good Alkali: Excellent Salts: Excellent Solvent: Fair to Excellent Water: Excellent
VOLUME SOLIDS:	100% +/- 2%
WEIGHT SOLIDS:	100% +/- 2%
MIX RATIO, WEIGHT:	76.67 Pts B to 100 Pts A
MIX RATIO, VOLUME:	1 Pt B to 1 Pt A
FLASH POINT:	>200°F.-(93.3°C.) TCC
POT LIFE:	2 Hours, Minimum @ 77°F.
SHELF LIFE:	1 Year, Minimum
THINNER - REDUCTION:	Steelcote T-217 up to 20%
THINNER - CLEAN UP:	Steelcote T-217 or T-184
INDUCTION TIME:	30 Minutes Minimum
APPLICATION TEMPERATURE:	50° - 90°F. (10° - 32°C.)
SERVICE TEMPERATURE:	350°F. (177°C.) Max. (Dry)
GLOSS:	High Gloss
COLOR:	White or to-order
PACKAGING:	2 gal. and 10 gal. units
WEIGHT PER GALLON:	10.6 lbs. (4.82 kg) ± 2%
V.O.C. (Volatile Organic Compound):	0#/gal, 0 g/l 1.37#/gal, 164 g/l ml

COVERAGES

THEORETICAL COVERAGE:
160 square feet per gallon at 10 mils DFT (allow for application losses)

RECOMMENDED WET FILM THICKNESS:
8-12 mils (200-300 microns)

RECOMMENDED DRY FILM THICKNESS:
8-12 mils (200-300 microns)

DRYING TIME

@ 77°F. (25°C.) 50% RH

TO TOUCH:	8 - 10 Hours
TO RECOAT:	18 Hours unthinned 24 Hours thinned
FINAL CURE:	7 Days Non-Immersion 14 Days-Immersion

RECOMMENDED PRIMERS

TO STEEL: Epo-Lux 121 E-14G, Steelmastic 168, Epo-Lux 168, Speedepoxy, Monomid Metal Primer

TO GALVANIZED: MCU 2100 Type VIII, Speedepoxy with Add-A-Lume

TO MASONRY: Monomid Sealer or Hi-Build Intermediate, Epo-Lux 121 PS, Speedepoxy, Epo-Lux 150, Corite Primer, or Wall-Nu Brushable, or Trowelable (as block filler or repair)

SURFACE PREPARATION

TO STEEL: Surface preparation will vary widely with the exposure conditions. Minimum requirements shall be: remove any grease, oil, dirt, or surface contaminants by solvent wiping with T-217 in accordance with SSPC-SP1 specification. Hand or power tool clean in accordance with SSPC-SP2 or SSPC-SP3 specification in order to remove any loose rust or scale. Apply one of the Steelcote recommended primers per label instructions to the clean, dry steel. Topcoat at the appropriate time with Tile-X 3000 per label instructions.

For severe environments: sandblast to a Commercial finish in accordance with SSPC-SP6 specification in order to obtain a clean, dry, sound substrate. For immersion, sandblast in accordance with SSPC-SP-10 specifications. Obtain a sandblast profile of approximately 25% that of the expected coating system thickness. Apply one of the Steelcote recommended primers per label instructions. Topcoat at the appropriate time with Tile-X 3000 per label instructions. Clean all tools and equipment with Steelcote T-217 after use.

TO GALVANIZED: Surface must be clean, dry, sound and free from oil, grease, wax, and foreign matter. Degrease by solvent wiping in accordance with SSPC-SP1 specification. For white rust or weathered galvanized steel, prepare by degreasing and hand or power tool clean in accordance with SSPC-SP2 or SSPC-SP3 specification in order to remove any loose rust or scale. Apply the Steelcote recommended primer per label instructions. Topcoat at the appropriate time with Tile-X 3000 per label instructions. Clean all tools and equipment with Steelcote T-217 after use.

TO MASONRY: Surface must be clean, dry, sound and free from oil, grease, wax, and foreign matter. Clean by washing with a solution of Tri-Sodium Phosphate (TSP) and warm water or high pressure water blasting. Allow to dry. For porous cinderblock, apply Steelcote Corite or Wall-Nu Block filler per label instructions and allow to dry. For immersion, sandblast to remove intervening barriers such as laitance, old paint, etc., and prime with Steelcote Monomid Clear Sealer or Monomid High Build Intermediate, per label instructions. Follow with two coats of Tile-X 3000, not less than 8 mils per coat. Topcoat at the appropriate time with Tile-X 3000 per label instructions. Clean all tools and equipment with Steelcote T-217 after use.

MIXING & APPLICATION

MIXING AND APPLICATION: Do not attempt to mix the material if it has been stored in a cold area for a period of time. The material should be warmed thoroughly to room temperature (at least 65°F) so that easier mixing and application can be obtained. Material can be warmed by setting the open cans in hot water or in a warm room before use. Warming the material reduces the viscosity to the proper consistency for easy application and thorough mixing. Do not mix more than a two gallon unit at any one time if application cannot be accomplished within the pot life limitations for best results. Mixing of quantities of two (2) gallons or more of Tile-X 3000 must be accomplished with an a 30 R.P.M. electric "KOL" or equivalent small paste or cement mixer of five (5) gallon or more capacity. Mixing with paddle or jiffy-type electric mixers or by hand is unacceptable except for mixes of less than two gallons, or as described next. Pre-stirring of Part "A" activator and Part "B" Base may be accomplished by hand stirring of each part. Power mixing on the KOL Mixer with a perforated-type mixing blade of Parts "A" and "B" in proper ratio shall be three (3) minutes by the clock, mix vertically with a slow speed Jiffy Mixer to achieve shear action. Mix shall then be transferred to a second clean five gallon pail scraping sidewalls and mixing blade of the first container and pouring into the center of the second container. Re-mix in the second container for one minute. To thin the material for spray application, up to 20% of T-217 may be added, but then coverage is reduced to ten mils per coat and the drying interval increases to 24 hours between coats to allow for solvent release. When mixing is complete, allow material to induct for 30 minutes. Apply over one of the primers mentioned on the previous page.

BRUSH: A clean, natural bristle brush is suitable for small areas. Reduce up to 5% with Steelcote T-217 if necessary.

ROLL: Use a short nap, mohair roller with a phenolic core. Smooth as necessary with E-Z Paintr flat applicator. Reduce with Steelcote T-217, if necessary, up to 5%.

CONVENTIONAL SPRAY

Not Recommended

AIRLESS SPRAY

Pump Ratio:	45:1
Gun:	Bulldog or President 206-718
Tip Size:	Reverse-A-Clean 417
Fan Size:	6" - 8"
Pressure:	2500 psi
Material Hose ID:	1/2" to 50 feet to 3/8" whip 8-12 feet

Reduce up to 20% with Steelcote T-217, if necessary. Do not use ketone solvents!

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MITED WARRANTY: The information presented herein is, to the best of our knowledge, true and accurate. No warranty or guarantee, express or implied, is made regarding the rformance or stability of any product since the manner of use and condition of storage and handling are beyond our control. Our liability in supplying these products is limited lely to replacement of any product found to be defective. THIS LIMITED WARRANTY IS GIVEN EXPRESSLY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IM-LIED, OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, CONSTITUTES THE ONLY WARRANTY MADE BY THE MANUFACTURER OF FITNESS OR MER-CHANTABILITY, AND THERE ARE NO OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, IN FACT OR BY LAW. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing Patent.

The information contained herein is based upon data found by our own, or independent testing laboratory. It is considered accurate at the date of issuance, and is subject to change without notice.

APPENDIX 7A

APPENDIX 7A

BUILDING EMERGENCY PLAN FOR THE CENTRAL WASTE COMPLEX

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This plan covers the following buildings and structures: 285-W Sanitary Water Shed, 286-W Sanitary Water Shed, MO-288, 2401-W, 2402-W, 2402-WB through 2402-WL, 2403-WA through -WD, and 2404-WA through -WC Waste Storage Buildings, Flammable and Alkali Metal Waste Storage Modules, Waste Receiving and Staging Area, 2120-WA Sprung Structure, 2120-WB Sprung structure, and the Waste Storage Pad.

Approved:

Building Emergency Director	5/13/98 Date
Manager, Solid Waste Project	5/13/98 Date
Hanford Fire Department	5-13-98 Date
Emergency Preparedness	5-13-98 Date

This plan will be reviewed annually and updated as required by the Building Emergency Director and modified pursuant to Washington Administrative Code (WAC) 173-303-830 and in accordance with the Hanford Facility RCRA Permit. This document will be approved by the Manager of Emergency Preparedness (or delegate) and the Hanford Fire Department.

CONTENTS

1.0 GENERAL INFORMATION

The Central Waste Complex (CWC) is located on the Hanford Site, a 560-square-mile U.S. Department of Energy (DOE) operational site in southeastern Washington State. The CWC is located in the western portion of the 200 West Area. The Hanford Site Emergency Preparedness Program is based upon the incident command system which allows a graded approach for response to emergency events. This plan contains a description of unit specific emergency planning and response. It is used in conjunction with DOE/RL-94-02, *Hanford Emergency Response Plan*. Response to events is performed using unit specific and/or Site level emergency procedures. The CWC subordinate documents implement DOE/RL-94-02.

1.1 **FACILITY NAME:** U.S. Department of Energy Hanford Site
Central Waste Complex

1.2 **FACILITY LOCATION:** Benton County, Washington; within the 200 West Area.

The following buildings/structures are covered by this plan:

*285-W	Sanitary Water Shed
*286-W	Sanitary Water Shed
*MO-288	Mobile Office Building
*2120-WA	Sprung Structure Miscellaneous Material/Equipment Storage
*2120-WB	Sprung Structure Miscellaneous Material/Equipment Storage
2401-W	Waste Storage Building
2402-W	Waste Storage Building
2402-WB	Waste Storage Building
2402-WC	Waste Storage Building
2402-WD	Waste Storage Building
2402-WE	Waste Storage Building
2402-WF	Waste Storage Building
2402-WG	Waste Storage Building
2402-WH	Waste Storage Building
2402-WI	Waste Storage Building
2402-WJ	Waste Storage Building
2402-WK	Waste Storage Building
2402-WL	Waste Storage Building
2403-WA	Waste Storage Building
2403-WB	Waste Storage Building
2403-WC	Waste Storage Building
2403-WD	Waste Storage Building
2404-WA	Waste Storage Building
2404-WB	Waste Storage Building
2404-WC	Waste Storage Building

Flammable Waste Storage Modules (1 through 27)
Alkali Metal Waste Storage Modules (1 through 4)
Waste Receiving and Staging Area
Waste Storage Pad

* Not part of the CWC treatment and storage activities; therefore, not subject to Washington Administrative Code 173-303 regulations.

1.3 OWNER: U.S. Department of Energy
Richland Operations Office
825 Jadwin Avenue
Richland, Washington 99352

FACILITY MANAGER: Waste Management Federal Services of Hanford, Inc.
P.O. Box 700
Richland, Washington 99352

1.4 DESCRIPTION OF THE FACILITY AND OPERATIONS

The CWC provides storage for dangerous, mixed, and radioactive waste. Buildings, storage modules, and storage pads provide space for waste containers.

1.5 BUILDING EVACUATION ROUTING (BUILDING LAYOUT)

Figure 1 provides identification of the primary and secondary staging areas and a general overview of the CWC.

1.5.1 Building Evacuation Routes

Figure 1 provides identification of emergency evacuation routes from the CWC.

1.5.2 Building Evacuation Routes (Building to Staging Area)

The primary staging area for the CWC is located southeast of the Waste Receiving and Staging Area. The alternate staging area for the CWC is located at the northwest corner of the MO-720/721 parking lot. Evacuation alarms are described in Section 7.1; responses to alarms are described in Section 7.2.

2.0 PURPOSE

This Building Emergency Plan describes both the hazards and the basic responses to off-normal and/or emergency conditions at CWC. "Emergency" as used in this document includes events meeting the Washington Administrative Code (WAC) 173-303 definition of Emergency, as well as U.S. Department of Energy (DOE) Order 232.1 categories of Unusual Occurrence and Emergency. These events include spills or releases as a result of waste management, fires and explosions, transportation activities, movement of materials, storage of hazardous materials, packaging, and natural and security contingencies. When used in conjunction with DOE/RL-94-02, *Hanford Emergency Response Plan*, this plan meets the requirements for contingency planning as required by WAC 173-303.

3.0 BUILDING EMERGENCY ORGANIZATION

The CWC maintains a weekly on-call list for technical expert notification. Upon notification, the on-call person will notify the primary or alternate Building Emergency Director (BED) to respond to the scene in person as necessary. The on-call technical expert will maintain contact with the on-scene Incident Commander (IC) until arrival of CWC personnel.

Building emergency organizations are discussed in the following sections.

3.1 BUILDING EMERGENCY DIRECTOR

Emergency response will be directed by the BED until the IC arrives. The incident command structure and staff with supporting on-call personnel fulfill the responsibilities of the Emergency Coordinator as discussed in WAC 173-303-360.

During events, CWC personnel perform response duties under the direction of the BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the Incident Commander (IC) and as such have the authority to request and obtain any resources necessary for protecting people and the environment. The BED becomes a member of the ICP and functions under the direction of the IC. In this role the BED continues to manage and direct CWC operations.

A listing of the primary and alternate BEDs by title, work location and work telephone numbers is contained in a separate, internally controlled document. The BED is on the premises or is available through an 'on-call' list 24 hours a day. Emergency Preparedness maintains a listing of BED names, work and home telephone numbers at the Patrol Operations Center (POC) in accordance with *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

3.2 OTHER MEMBERS

As a minimum, the BED appoints and ensures training is provided to individuals who perform as Personnel Accountability Aides and Staging Area Managers. The Accountability Aides are responsible for facilitating the implementation of protective actions (evacuation or take cover) and for facilitating the accountability of personnel after the protective actions have been implemented. Staging Area Managers are responsible for coordinating/conducting activities at the Staging Area.

In addition, the BED may identify additional support personnel (radiological control [RC], maintenance, engineering, hazardous material coordinators, etc.) to be part of the building emergency organization.

The building emergency organization listing of positions, names, work locations, and telephone numbers for the CWC is maintained in a separate location in a format approved by CWC management. Copies are distributed to appropriate facility locations and to Emergency Preparedness. The building emergency organization list for the CWC is posted at the RL-Emergency Operations Center, MO-288, and at the ICP in MO-720 in the 200 West Area.

4.0 IMPLEMENTATION OF THE PLAN

To meet the requirements of WAC 173-303-360, this plan will be considered to be implemented when the BED has determined that a release, fire, or explosion that could threaten human health or the environment (WAC 173-303-360 Emergency) has occurred at CWC. The incident classification process is described in DOE/RL-94-02, Section 4.2.

Under the DOE guidance, this plan will be considered implemented whenever the BED determines that one of the incidents listed in Section 6.0 has or will occur and that the severity is or will be such that there is a potential to threaten human health or the environment (DOE Unusual Occurrence or Emergency). The BED will implement this plan through DOE/RL-94-02, *Hanford Emergency Response Plan*, and CWC and/or site-specific procedures (see Attachment A). DOE declared emergencies are assigned to three classifications, which are listed in order of increasing severity: alert emergency, site area emergency, and general emergency. The CWC implements these DOE emergencies through identified criteria in DOE-0223, RLEP 1.1, Appendix 1-2.D; this plan; and other documents listed in Attachment A.

The BED must assess each incident to determine the response necessary to protect personnel, CWC, and the environment. If assistance from Hanford Patrol, Fire, or ambulance units is required, the Hanford Emergency Response Number 911 (373-3800 if using a cellular telephone) must be used to contact the Patrol Operations Center and request the desired assistance. To request other resources or assistance from outside the CWC, the Patrol Operations Center business number is used (373-3800). The Emergency Duty Officer (EDO) is requested when making the initial 911 call.

5.0 FACILITY HAZARDS

Hazards at the CWC potentially include radiological, chemical, and industrial hazards.

5.1 HAZARDOUS MATERIALS

Hazardous materials include (but might not be limited to) the following: spray adhesive, sorbent, diesel fuel, hydraulic oil, propane, road salt, industrial cleaner and degreaser, and unleaded gasoline. The use, storage, and inventory of hazardous materials is controlled. Hazardous material inventories and material safety data sheets (MSDS) are maintained in MO-288.

5.2 INDUSTRIAL HAZARDS

Industrial hazards could include injuries from falls, transportation incident, accidents with moving equipment, exposure to spilled waste or chemicals, or from radiological or chemical exposure from spills. Potential material handling mishaps are associated with forklift or crane operations. These include potential rupture of packages due to misalignment of the forklift tines or a load dropped during a crane operation.

5.3 WASTE STORAGE LOCATIONS

Waste is stored in the following locations:

2401-W	Waste Storage Building
2402-W	Waste Storage Building
2402-WB	Waste Storage Building
2402-WC	Waste Storage Building
2402-WD	Waste Storage Building
2402-WE	Waste Storage Building
2402-WF	Waste Storage Building
2402-WG	Waste Storage Building
2402-WH	Waste Storage Building
2402-WI	Waste Storage Building
2402-WJ	Waste Storage Building
2402-WK	Waste Storage Building
2402-WL	Waste Storage Building
2403-WA	Waste Storage Building
2403-WB	Waste Storage Building
2403-WC	Waste Storage Building
2403-WD	Waste Storage Building
2404-WA	Waste Storage Building
2404-WB	Waste Storage Building
2404-WC	Waste Storage Building

Flammable Waste Storage Modules (1 through 27)
Alkali Metal Waste Storage Modules (1 through 4)
Waste Receiving and Staging Area
Waste Storage Pad.

5.4 CRITICALITY

Criticality has been evaluated as being 'incredible,' less than one chance in a million in a year, in the authorization basis. Therefore, there are no facility specific actions required.

6.0 POTENTIAL EMERGENCY CONDITIONS

The credible types of and extent of emergencies caused are described here, unless identified as Not Applicable (N/A). The response action for each type of emergency is listed in Section 7.0.

Potential emergency conditions, under both WAC 173-303 and DOE guidance, may include one of three basic categories: operations (process upsets, fires and explosions, loss of utilities, spills, and releases), natural phenomena (earthquakes), and security contingencies (bomb threat, hostage situation, etc.).

6.1 FACILITY OPERATIONS EMERGENCIES

The following sections include a description of the 'worst-case' accident anticipated for each of the identified credible emergencies. This information typically is derived from the safety analysis report, hazards evaluation, or risk assessment for the unit.

6.1.1 Loss of Utilities

- Loss of Electricity. Electricity powers two louvered exhaust fan systems in each of the 2402-W series and 2404-W series buildings and four louvered exhaust fan systems in the 2403-W series buildings. Loss of electrical power will result in deactivation of the fixed-head air sampler and exhaust fans but does not constitute an emergency situation.

- Loss of Water. Loss of fire sprinkler systems in the 2402-W series buildings, the 2403-W series buildings, and the 2404-W series buildings negatively impacts fire fighting capabilities.

- Loss of Ventilation. In the event of leaking containers, loss of fan ventilation in the storage buildings might result in the buildup of toxic or explosive vapors.

- Loss of Steam - N/A.

- Loss of Air - N/A.

6.1.2 Major Process Disruption/Loss of Plant Control - N/A.

6.1.3 Pressure Release

Potential pressure hazards at the CWC involve pressure buildup in stored containers.

6.1.4 Fire and/or Explosion

Potential fire hazards include smoke inhalation, burns, damage to equipment and/or structures, and release of hazardous materials or dangerous, mixed, and radioactive waste constituents from containers.

A fire or an explosion in the CWC might result in a dangerous, mixed, or radioactive waste release.

The combustion potential for chemicals such as peroxides or pyrophorics within containers is controlled by the management of waste packaging in accordance with onsite methods. The WAC 173-303 regulations prohibit the storage of chemically incompatible materials in common containers. Additionally, WAC 173-303 prohibits mixing containers of incompatible waste within common storage areas.

The 2401-W, 2402-W, 2403-W and 2404-W series buildings are equipped with individual fire system alarms. Fire alarm pull boxes are located at each exit and at the main entrance.

6.1.5 Hazardous Material Spill

Hazardous materials are stored in the CWC. Spills or releases of hazardous materials could result in the following conditions:

- Spill of Hazardous Material. Hazards associated with a spill include potential exposure to dangerous constituents as well as potential environmental damage. Releases likely would be confined within the CWC.

- Toxic Fumes Hazards. Hazardous materials stored at the CWC is a potential airborne contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes.

- Fires or Explosions Involving Hazardous Material. A fire or chemical reaction in the CWC could result in the release of dangerous constituents to the air or soil.

- Reactive Chemical/Corrosive Material Hazards. Misrepresented shipments and/or transfers of incompatible hazardous materials stored at the CWC could potentially cause chemical reactions resulting in fire, explosion, and dangerous waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards. Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Hazards associated with flammable materials and liquids include fire, explosion, and release of dangerous waste.

- Asbestos Release. The CWC structure does not contain asbestos, but dangerous waste containing asbestos could be stored inside containers stored within the structure. Release of friable asbestos waste could result in an inhalation hazard.

- Explosive Materials/Munitions Hazards - N/A.

6.1.6 Dangerous and Mixed Waste Spill

A dangerous, mixed, and/or radioactive waste spill could result in potential personnel contamination through skin contact or via airborne contamination. Environmental impact could include contaminated water or soil.

- Spill of Dangerous and Mixed Waste. Hazards associated with a spill include potential exposure to dangerous, mixed, and/or radioactive constituents as well as potential environmental damage. Releases likely would be confined to a local area because container contents routinely are not in a liquid or powder form.

- Toxic Fumes Hazards. Dangerous, mixed, and radioactive waste stored at the CWC is a potential airborne radioactive contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes. Plutonium, an alpha emitter, is known to generate hydrogen (H_2) gas when hydrogenous materials are present in the waste; however, catalytic recombiners are used to maintain H_2 gas concentrations below 1 percent in waste containers and are replaced whenever the waste is repackaged. The recombiners used onsite are projected to maintain the oxygen (O_2) concentration below 0.5 percent, and the H_2 concentration below 1 percent.

NOTE: Container damage resulting in material upset without the H_2 + O_2 recombiner could lead to a hydrogen explosion and subsequent release to onsite populations and the environment.

Waste acceptance criteria require that the offsite generators and onsite generating units document waste with gas-generating potential and that the requirement for gas recombiners be specified on the waste tracking forms.

- Fires or Explosions Involving Dangerous and Mixed Waste. A fire or chemical reaction in the CWC could result in the release of dangerous and/or radioactive constituents to the air or soil.

- Reactive Chemical/Corrosive Hazards. Misrepresented shipments and/or transfers of incompatible dangerous or mixed waste managed at the CWC could potentially cause chemical reactions resulting in fire, explosion, and dangerous, mixed, and/or radioactive waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards - Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Fire involving flammable materials/liquids could cause damage to containers resulting in potential dangerous, mixed, and or radioactive waste releases. Liquid waste stored at the CWC could include containers with lab packs (e.g., vials of liquids packed with absorbent solids) or containers containing solvent-soaked rags that are packed with absorbent material. Except for lab packs, containers with free liquid cannot have greater than 10 percent unabsorbed liquid. If a fire occurs involving these items, a 'worst case' (e.g., assume entire container is liquid) will be assumed until the containers can be opened and inspected.

- Asbestos Release. Asbestos materials are potential components of waste stored at the CWC. Damage to these containers could result in an unplanned release of friable asbestos to the environment, creating an inhalation health hazard.

- Explosive Materials/Munitions Hazards - N/A .

6.1.7 Transportation and/or Packaging Incidents

Potential consequences of transportation and/or packaging incidents are spills or spread of radioactive contamination, chemical contamination, or personnel contamination. A forklift-damaged container could result in fire or explosion.

6.1.8 Radiological Material Release

- Gaseous Effluent Discharges (Stack Releases) - N/A.

- Liquid Effluent Discharges - N/A.

- *Significant Contamination Spread/Releases*. Significant contamination spread or release might involve hazards resulting from exposure to dangerous, mixed, and/or radioactive waste. The major potential cause of spread or a release includes damaged containers, high winds, or a fire that might disperse contaminated airborne particles.

6.1.9 Criticality

The CWC is a Limited Control Facility because the CWC can contain more than one-third of a minimum critical mass, but the form or distribution of the fissionable material precludes a criticality accident.

6.1.10 Dangerous, Mixed, and Radioactive Waste Not Acceptable (and Cannot be Transported)

Acceptable reasons for denying receipt of a dangerous, mixed, and/or radioactive waste transfer/shipment are as follows.

- The CWC is not capable of managing the dangerous waste type.

- A significant discrepancy exists between the transfer/shipment and the waste listed on the manifest or tracking form.

- The waste arrives in a condition that presents an unreasonable hazard to operations or personnel.

6.2 NATURAL PHENOMENA

Natural phenomena are discussed in the following sections.

6.2.1 Seismic Event

Depending on the magnitude of the event, severe structural damage could occur resulting in serious injuries or fatalities and the release of dangerous, mixed, and/or radioactive waste. Damaged electrical circuits and wiring could result in the initiation of multiple fires.

6.2.2 Volcanic Eruption/Ashfall

Ashfall could cause shorts in electrical equipment and plug ventilation system filters.

6.2.3 High Winds/Tornados

High winds or tornados might cause structural damage to systems containing dangerous, mixed, and/or radioactive waste resulting in a release of these constituents to the environment.

6.2.4 Flood - N/A.

6.2.5 Range Fire

The hazards associated with a range fire include those associated with a building fire plus potential site access restrictions and travel hazards such as poor visibility.

6.2.6 Aircraft Crash

In addition to the potential serious injuries or fatalities, an aircraft crash could result in the direct release of dangerous, mixed, and/or radioactive waste or cause a fire that could lead to the release of dangerous, mixed, and/or radioactive waste.

6.3 SECURITY CONTINGENCIES

Security contingencies are discussed in the following sections.

6.3.1 Bomb Threat

A bomb threat might be received by anyone who answers the telephone or receives mail. The major effect on CWC is that personnel will need to perform an emergency shutdown for personnel to be evacuated. If a bomb explodes, the effects are the same as those discussed under fire and explosion.

6.3.2 Hostage Situation

A hostage situation could pose an emergency situation if there is the potential to adversely impact CWC. This can be as a result of losing control (operators removed from their stations) or when the situation results in the coercion of personnel to take some malevolent action.

6.3.3 Suspicious Object

The major effect on CWC is that personnel will need to perform an emergency shutdown for personnel to be evacuated.

7.0 INCIDENT RESPONSE

The initial response to any emergency is to immediately protect the health and safety of persons in the affected area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment will be the secondary responses.

The following sections describe the process for implementing basic protective actions as well as descriptions of response actions for the events listed in Section 6.0. DOE/RL-94-02, Section 1.3, provides concept of operations for emergency response on the Hanford Site.

7.1 PROTECTIVE ACTIONS RESPONSES

Protective actions responses are discussed in the following sections.

7.1.1 Evacuation

If an evacuation is ordered or the evacuation siren sounds at CWC, personnel shall proceed to the following staging areas:

Central Waste Complex Staging Areas	Area	Location
Primary staging area	Central Waste Complex	Southeast of the Waste Receiving and Staging Area
Secondary staging area	MO-720/721 Complex	Northwest corner of parking lot

The BED or Staging Area Manager directs the evacuation; however, to ensure that evacuations are conducted promptly and safely, all personnel shall be familiar with the correct evacuation procedure. The order to evacuate normally will be passed via the site Crash Alarm Telephone system.

Area evacuations are either rapid or controlled, as pointed out in the following steps. When possible, the following steps must be conducted concurrently.

Area Evacuation Procedure
Halt any operations or work and place the equipment and structures in a safe condition. Use emergency shutdown procedures for rapid evacuation.
Use whatever means are available (bullhorns, runners, etc.) to pass the evacuation information to personnel.
Evacuate personnel to the staging area; group personnel as follows: potentially contaminated protective clothing, keys immediately available for vehicles, those needing rides.
Conduct personnel accountability. Report personnel accountability results to the RL-Emergency Operations Center (RL-EOC) (373-1786, 373-3876, 376-8612, 376-4712).
Inform IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) once the IC arrives at the ICP.
Relay pertinent evacuation information (routes, destination, etc.) to drivers.
Dispatch vehicles as soon as the vehicles are loaded.
Report status to the RL-EOC, request additional transportation if required, and report if any personnel remain who are performing late shutdown duties.

7.1.2 Take Cover

When the Take Cover Alarm is activated, personnel must take cover in the nearest building or trailer and report their location to line management or the Building Emergency Director. Normally, the CWC will be alerted of a Take Cover via the Area Crash Alarm Telephone System at MO-288 and/or the area emergency sirens. A message followed by the Take Cover siren will be transmitted over the area emergency sirens. The following actions must be taken or considered:

- Shut doors and windows and wait for further instructions
- Secure ventilation system
- Follow normal exit procedures from radiological areas
- Lock up classified documents and prepare for a possible evacuation
- Report your location to the Accountability Aid or the BED
- Accountability Aides will provide accountability status to the Staging Area Manager for facility personnel during an event.

7.2 RESPONSE TO FACILITY OPERATIONS EMERGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the unit-specific emergency response guide, specific sections of this plan, and/or plant operating procedures (POPs) and classifies the event, initiates area protective actions (facility and area sirens, notifications, etc.) and activates the site emergency response organization. Attachment A provides a list of procedures and emergency response guides.

7.2.1 Loss of Utilities

- Loss of Electricity. Personnel notify the BED and the appropriate maintenance personnel for repair.
- Loss of Water. Loss of water to a fire protection system is classified as an emergency condition. Personnel notify the Hanford Fire Department, and establish a fire watch.
- Loss of Ventilation. Personnel notify the BED and the appropriate maintenance personnel for repair.
- Loss of Steam - N/A.
- Loss of Air - N/A.

7.2.1.1 Utility Disconnect Plan for Central Waste Complex

Use these steps to place the utilities in a safe and secure condition when an emergency has been declared, or when directed by the BED.

- Heating, Ventilation, and Air Conditioning (HVAC)

  2401-W Building. Place the "Northeast Fan" and "Southwest Fan" switches (located in the main electrical distribution control panel on the west wall) in the OFF position.

  2402-W Series Buildings. Place the "Fan NE" and "Fan SW" switches (located in the main electrical distribution control panel on the east or west wall) in the OFF position.

  2403-W Series Buildings. Place disconnect switches in the main panel in the OFF position. Each of the four fan units has an electrical disconnect located on the north wall near the unit. Specific electrical service locations are as follows.

  - Main electrical service disconnect is located 29.53 feet south of the 2403-WA building.
  - Interior building electrical disconnects are located near the center on the east and north walls of 2403-WA and 2403-WB buildings.

- Disconnects for 2403-WC and 2403-WD buildings are located near the center of the west and north walls.

2404-WA and 2404-WB Place the two disconnect switches located on the interior of the west end of the building just south of the west personnel door in the OFF position. In addition, both buildings have an emergency shut off switch located on the exterior of the west side of the buildings between the personnel door and the roll up door.

The exhaust fan on top of the mechanical/electrical/telephone room is de-energized by placing circuit 2 in panel B in the OFF (open) position.

2404-WC Place the two disconnect switches located on the interior of the east end of the building just south of the east personnel door. There is an emergency shut off switch located on the east side of the exterior of the building between the personnel door and the roll up door.

The exhaust fan on top of the mechanical/electrical/telephone room is de-energized by placing circuit 2 in panel B in the OFF (open) position.

- Electrical

2401-W Building. Place the "Service Disconnect" switch (located in the main electrical distribution panel on west wall) in the OFF position.

2402-W Series Buildings. Place the "Service Disconnect" switch (located in the main electrical distribution panel on the east or west wall) in the OFF position.

2403-W Series Buildings. Place the "Service Disconnect" switch (located in the main electrical service disconnect at the outside panel on the southeast corner of 2403-WA Building on the electrical service pad) in the OFF position.

2404-W Series Buildings. Place the "Main Breaker" switch located in Panel "A" in the OFF (open) position. Panel "A" is located on the east wall of the M/E/T room in 2404-WA and 2404-WB and on the west wall of the M/E/T room in 2404-WC.

- Fire Sprinkler System (interior shutoff)

NOTE: These valves should be shut ONLY after consulting the Hanford Fire Department.

2404-W Series Buildings. Turn one of the two valves (located on either side of the backflow preventer) in the fire riser room to the closed position. Note that a tamper alarm will be received at the fire station.

- Fire Sprinkler System (exterior shutoff)

  NOTE: These valves should be shut ONLY after consulting the Hanford Fire Department.

  2401-W Building. Use the operating wrench affixed to the post-indicator valve (located south of the 285-W valve shed) to shut the valve. The valve is closed when the valve window words change from "Open" to "Shut."

  2402-W Series Buildings. Use the operating wrench to shut the valve (located about 224.7 feet west of the buildings). The valve is closed when the valve window words change from "Open" to "Closed."

  2403-W Series Buildings. Use the operating wrench affixed to the valves to shut the valves. The valve is closed when the valve window words change from "Open" to "Shut." The valves are located as follows:

2403-WA and 2403-WB	north of building
2403-WC and 2403-WD	east of building

  2404 Series Buildings. Use the operating wrench to shut off the PIV valves. The valve is closed when the valve window words change from "Open" to "Shut." The valves are located as follows:

  2404-WA valve 260 S located approximately 32.8 feet southwest of the building
  2404-WB valve 418 S located approximately 32.8 feet west of the building
  2404-WC valve 420 S located approximately 32.8 feet southeast of the building

- Sanitary Water/Sewer. For the CWC buildings, the back flow preventers cannot be disconnected by hand. Call the Hanford Fire Department at 911 (373-3800 if using a cellular phone) to disconnect.

- Process Water - N/A.

- Steam - N/A.

- Telephone Service. Call 376-6322 or 376-1611 and ask for the Telephone Service Contractor to disconnect service.

7.2.2 Major Process Disruption/Loss of Plant Control - N/A.

7.2.3 Pressure Release

On discovery of an existing or potential pressure hazard at CWC, ensure the following response:

- Notify personnel to leave the area of the hazard

- Inform the BED
- Evacuate affected areas
- Perform sampling or testing in accordance with recommendations from engineering and industrial safety, and (if indicated) repackage any containers with pressure buildup.

7.2.4 Fire and/or Explosion

Fire fighting in the CWC is complicated by the presence of large amounts of dangerous, mixed, and/or radioactive waste. To avoid contamination, it is extremely important to avoid breaching containers, buildings, or any other containment where there is dangerous, mixed, and/or radioactive waste.

In the event of a fire, the discoverer activates a fire alarm, calls 911 (373-3800 if using a cellular phone), and evacuates. Automatic initiation of a fire alarm (through the smoke detectors and sprinkler systems) also is possible.

- On actuation of the fire alarm, personnel shut down equipment, secure waste, ONLY if time permits. The alarm automatically signals the Hanford Fire Department
- Personnel leave the area/building by the nearest safe exit and proceed to the designated staging area for accountability unless otherwise instructed
- The BED proceeds directly to the MO-720 conference room and sets up the Incident Command Post. The BED will obtain all necessary information pertaining to the incident and will meet with, or send a representative to meet with, the Hanford Fire Department
- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP
- Depending on the severity of the event, the BED reviews site-wide procedures, the facility specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides
- The BED informs the site organization as to the extent of the emergency (including estimates of mixed waste or radioactive material quantities released to the environment)
- If operations are stopped in response to a fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures

- Hanford Fire Department firefighters extinguish the fire

- The BED ensures that all emergency equipment is cleaned and fit for its intended use following completion of cleanup procedures.

7.2.5 Hazardous Material, Dangerous, Mixed, and/or Radioactive Waste Spill

Spills can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazard induced by the presence of radioactive materials. The appropriate response to a spill or release is identified as follows.

The discoverer performs the following actions for a spill and/or release:

- Notifies CWC personnel (including BED) of discovery of spill or release

- Initiates notifications to the Hanford Fire Department (HazMat Team) by calling 911 (373-3800 if using a cellular phone), and provides all known information, or verifies that the BED has called 911 or determined that emergency response assistance is not required

- Ensures that any personnel that have been exposed to a spilled chemical and/or have suffered an injury receive proper first aid, immediate medical attention, and that the PHMC health advocate is contacted by the EDO. In case of contact with a chemical, immediately flush eyes or skin with water for at least 15 minutes and promptly remove contaminated clothing and shoes. **Immediately** contact supervision and the Patrol Operations Center at 911 (373-3800 if using cellular phone) to report any injuries or exposure and obtain Hanford Fire Department medical response.

- Takes action to contain and/or to stop the spill or container leak only if all of the following are true:

  - The identity of the substance(s) involved is known

  - Appropriate protective equipment and control/cleanup supplies, e.g., absorbents, are readily available

  - Discoverer can safely perform the action(s) without assistance, or assistance is readily available from other trained personnel.

If any of the previous conditions are not met or if there is any doubt, evacuate the area and remain outside, upwind of the spill. The discoverer will remain available for consultation with the BED, Hanford Fire Department, or other emergency response personnel and restricts access to the area until the arrival of the BED.

The BED performs or arranges for the following:

- Establishes a command post at a safe location, and coordinates further spill mitigation activities

NOTE: *The incident command post for all Solid Waste units is located in the MO-720 conference room; the command post may be moved to another location at the discretion of the BED.*

- Obtains all available information pertaining to the incident and determines if the incident requires implementation of DOE/RL-94-02

- Reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides

- Informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP

- Arranges for care of any injured persons

- Maintains access control at the incident site by keeping unauthorized personnel and vehicles away from the area. Security personnel can be used to assist in site control if control of the boundary is difficult (e.g., repeated incursions). In determining controlled access areas, considers environmental factors such as wind velocity and direction

- Arranges for proper remediation of the incident after evaluation

- Remains available for fire, patrol, and other authorities on the scene, and provides all required information

- Enlists the assistance of alternate BED(s), if response activities are projected to be long term

- Ensures the use of proper protective equipment, remedial techniques, transfer procedures [including ignition source control (e.g., nonsparking tools, grounding containers, isolation of ignition sources, use of explosion-proof electrical equipment, etc.) for flammable or reactive spills], and decontamination procedures by all involved personnel, if remediation is performed by CWC personnel

- Remains at the emergency command post to oversee activities and to provide information, if remediation is performed by the Hanford Fire Department Hazardous Materials Response Team or other response teams

- Ensures proper containerization, packaging, and labeling of recovered spill materials and overpacked containers

NOTE: All containers of spill debris, recovered product, etc., are managed in the same manner as waste containers. Overpacks in use are marked with information pertaining to their contents and noted as to the condition of the inner container (major leak, pinhole leak, etc.).

- If operations are stopped in response to the release, ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures
- Ensures decontamination (or restocking) and restoration of emergency equipment used in the spill remediation before resuming operations
- Provides required reports after the incident, in accordance with DOE/RL-94-02, *Hanford Emergency Response Plan.*

7.2.5.1 Receipt of Damaged or Unacceptable Shipments

In accordance with WAC 173-303-370, when a damaged shipment or transfer of dangerous, mixed, and/or radioactive waste arrives at the CWC and the shipment/transfer is unacceptable for receipt, the damaged shipment/transfer must not be moved.

If a damaged shipment or transfer results in a spill, the following actions are performed:

- Notify the BED, the Hanford Fire Department, and the appropriate personnel to advise of the situation. The BED responds and assists in the evaluation of, and response to, the incident. The BED informs the IC of conditions upon arrival
- Notify the offsite generator or onsite generating unit of the damaged shipment/transfer, and request any information necessary to assist in responding to the spill
- Proceed with remedial action, including overpacking damaged containers, cleanup of spilled material, or other necessary actions to contain the spill. Refer to Section 7.2.5 for remedial actions.

7.2.5.2 Transportation Incidents

In accordance with WAC 173-303-145, the discoverer or BED could take the following actions for leaks or spills resulting from a hazardous materials transportation incident if the actions can be performed without jeopardizing personnel safety, as appropriate:

- Determines the nature of incident
  - Personnel injuries
  - Hazardous material spill with fire
  - Hazardous material spill without fire
- Assists injured personnel

- Initiates notifications to the appropriate personnel by any means available (telephone, radio, passing motorist, etc.) to request assistance from the Hanford Fire Department (Emergency Coordinator/Incident Commander for these type of events), Hanford Patrol, and medical personnel

- Remains in a safe location and attempts to isolate the area to prevent inadvertent personnel access

- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP.

7.2.6 Radiological Material Release

- Radioactive Gaseous Effluent Discharge. Air sampling will be performed using the appropriate equipment any time a worker is likely to be exposed to 10 percent of the isotopes Derived Air Concentration (DAC). Tritium oxide (HTO) has a DAC value of 20 $\mu Ci/m^3$. For better control of personnel exposures, the following table is included.

Airborne Concentration Equal to 5 mrem Dose Equivalent			
Concentration	**Time**	**Concentration**	**Time**
10 $\mu Ci/m^3$	4 hours	150 $\mu Ci/m^3$	15 minutes
15 $\mu Ci/m^3$	2.5 hours	200 $\mu Ci/m^3$	12 minutes
20 $\mu Ci/m^3$	2 hours	250 $\mu Ci/m^3$	10 minutes
30 $\mu Ci/m^3$	1 hour, 20 min	300 $\mu Ci/m^3$	8 minutes
50 $\mu Ci/m^3$	50 minutes	350 $\mu Ci/m^3$	7 minutes
80 $\mu Ci/m^3$	30 minutes	400 $\mu Ci/m^3$	6 minutes
100 $\mu Ci/m^3$	25 minutes	450 $\mu Ci/m^3$	5 minutes

All personnel possibly exposed to HTO will have a tritium bioassay performed as soon as possible (must be within 30 days of exposure).

- Radioactive Liquid Effluent Discharge. If fire protection water is released, the liquid will be contained and captured with absorbents if feasible. Surrounding areas will be sampled.

- Significant Contamination Spread. Stop work activities and immediately exit the area. Contact RC and stand by for survey and contamination status. Notify immediate manager and the BED.

7.2.7 Criticality

As a Limited Control Facility, the form or distribution of fissionable material precludes a criticality accident.

7.2.8 Dangerous, Mixed, Radioactive Waste not Acceptable (and Cannot be Transported)

- Solid waste operations isolates the area of unacceptable waste.
- Discoverer notifies the BED. The BED responds, evaluates, and notifies appropriate personnel. The BED informs the IC of conditions upon arrival.
- The solid waste project group assembles an investigation team.
- The investigation team determines the circumstances and the actions to be taken.
- The solid waste project group proceeds with the actions determined by the investigation team.
- The solid waste project group submits a written report to Ecology within 15 days of the incident.

7.3 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES

The BED, as part of the incident command system, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The following actions are taken:

- Isolates the area of the initial incident by shutting off power, shutting off or closing ventilation systems, etc., to minimize the spread of a release and/or the potential for a fire or explosion
- Inspects containment for leaks, cracks, or other damage
- Inspects for toxic vapor generation
- Removes released material and waste remaining inside of containment structures as soon as possible
- Contains and isolates residual waste material using dikes and absorbents
- Covers or otherwise stabilizes areas where residual released materials remain to prevent migration or spread from wind or precipitation run-off
- Installs new structures, systems, or equipment to enable better management of hazardous materials or dangerous, mixed, and/or radioactive waste

- Reactivates operations in affected areas only after cleanup of residual waste materials is achieved.

7.4 RESPONSE TO NATURAL PHENOMENA

Depending on the severity of the event, the BED reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Responses to natural phenomena are discussed in the following sections.

7.4.1 Seismic Event

The primary role of the emergency response organization in a seismic event is coordinating the initial response to injuries, fires, and fire hazards and acting to contain or control hazardous materials, and dangerous, mixed, and/or radioactive waste releases.

Individuals must remain calm and stay away from windows and hazardous material, dangerous, mixed, and/or radioactive waste locations. Once the shaking has subsided, individuals must evacuate carefully and assist those needing help. The location of any trapped individuals is reported to the BED or to 911 (373-3800 if using a cellular phone).

The BED takes whatever actions are necessary to minimize damage and personnel injuries. Actions include the following:

- Coordinating searches for personnel and potential hazardous conditions (fires, spills, etc.)
- Conducting accountability
- Securing utilities and CWC operations
- Arranging rescue efforts, and notifying 911 (373-3800 if using a cellular phone) for assistance
- Determining if hazardous materials, dangerous, mixed, and/or radioactive waste were released
- Determining current local meteorological conditions
- Warning other operations and implementing protective actions if the release poses a danger
- Providing personnel and resource assistance to other operations if required and possible.

7.4.2 Volcanic Eruption/Ashfall

When notified of an impending ashfall, the BED will implement measures to minimize the impact of the ashfall, such as:

- Installing filter media over building ventilation intakes
- Installing filter media or protective coverings on outdoor equipment that could be adversely affected by the ash (diesel generators, equipment rooms, etc.)
- Shutting down some or all operations and processes
- Sealing secondary use exterior doors
- Releasing all but essential personnel to go home.

If as a result of the ashfall other emergency conditions arise (e.g., fires due to electrical shorts or lightning), response is as described in other paragraphs of this section.

7.4.3 High Winds/Tornados

Upon notification of impending high winds, the BED takes steps necessary to secure all outdoor waste, hazardous material containers, and storage locations. Personnel must shut all doors and warn other personnel to use extreme caution when entering or exiting the building. The BED contacts the on-call manager for maintenance support as needed.

7.4.4 Flood - N/A.

7.4.5 Range Fire

If a range fire reaches the CWC, the fire could have the potential to ignite flammable stored materials. Personnel must secure ventilation systems and exterior doors on buildings to prevent sparks from entering the buildings, and notify the BED. A fire watch will be posted at the discretion of the BED.

Responses to range fires are handled by preventive measures (i.e., keeping hazardous material and waste accumulation areas free of combustible materials such as weeds and brush). If a range fire breaches the CWC boundary, the response is as described in Section 7.2.4.

7.4.6 Aircraft Crash

The response to an aircraft crash is the same as that for responding to a fire and/or explosion.

7.5 SECURITY CONTINGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Security contingencies are discussed in the following sections.

7.5.1 Bomb Threat

- Telephone Threat. Individuals receiving telephoned threats try to gain as much information as possible from the caller (using a bomb threat checklist if available). On conclusion of the call, notify the BED and Security via 911 (373-3800 if using a cellular phone).

The BED evacuates CWC and queries personnel at the staging area regarding any suspicious objects. When Security personnel arrive, follow their instructions.

- Written Threat. Receivers of written threats handle the letter as little as possible. Notify the BED and Security. Depending on the content of the letter, the CWC may or may not be evacuated. The letter is turned over to Security personnel and their instructions are followed.

7.5.2 Hostage Situation/Armed Intruder

The discoverer of a hostage situation or an armed intruder reports this to 911 (373-3800 if using a cellular phone) and to the BED if possible. The BED, after conferring with Security personnel, may covertly evacuate areas of the CWC not observable by the hostage taker(s)/intruder. No alarms will be sounded.

Security will determine the remaining response actions and will activate the Hostage Negotiating Team if necessary.

7.5.3 Suspicious Object

The discoverer of a suspicious object reports this to the BED and calls 911 (373-3800 if using a cellular phone), if possible, and ensures that the object is not disturbed.

The BED will evacuate the CWC and (based on the description provided by the discoverer) attempt to determine the identity or owner of the object. This may be done by questioning CWC personnel at the staging area. If the identity/ownership of the object cannot be determined, Security will assume command of the incident. The canine unit will be used to determine if the package contains explosives. If there is a positive indication of explosives or it cannot be assured that there are no explosives, then the Richland Police Department's Explosive Ordnance Team will be dispatched to properly dispose of the object.

8.0 TERMINATION OF EVENT, INCIDENT RECOVERY AND RESTART OF OPERATIONS

DOE/RL-94-02, Section 8.0, describes these considerations. The extent by which these actions are employed is based on the incident classification of each event. In addition, DOE/RL-94-02 also contains considerations for the management of incompatible wastes, which may apply.

8.1 TERMINATION OF EVENT

For events where the RL-EOC is activated, the RL Emergency Manager has the authority to declare event termination. This decision is based on input from the BED, IC, and other emergency response organization members. For events where the RL-EOC is not activated, the incident command structure and staff will declare event termination.

8.2 INCIDENT RECOVERY AND RESTART OF OPERATIONS

A recovery plan is developed when necessary. A recovery plan is needed following an event when further risk could be introduced to personnel, the CWC, or the environment through recovery action and/or to maximize the preservation of evidence. Depending on the magnitude of the event and the effort required to recover from the event, recovery planning might involve personnel from RL and other contractors. If a recovery plan is required, the plan is reviewed by appropriate personnel and approved by a Recovery Manager before restart. Restart of operations is performed in accordance with the approved plan.

If this plan were implemented for a WAC 173-303-360 emergency (Section 4.0), Ecology must be notified before operations can resume. DOE/RL-94-02, Section 6.1, discusses different reports to outside agencies. This notification is in addition to those required reports and must include the following statements:

- There are no incompatibility issues with the waste and released materials from the incident.

- All the equipment has been cleaned, is fit for its intended use, and placed back into service. The notification can be made via telephone conference. Additional information that Ecology requests regarding these restart conditions will be included in the required 15-day report identified in WAC 173-303-360(2)(k).

For emergencies not involving activation of the RL-EOC, the BED ensures that conditions are restored to normal before operations are resumed. If the Hanford Site Emergency Organization was activated and the emergency phase is complete, a special recovery organization could be appointed at the discretion of RL to restore conditions to normal. The makeup of this organization depends on the extent of the damage and its effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

8.3 INCOMPATIBLE WASTE

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed until cleanup is completed. Cleanup actions are taken by CWC personnel or other assigned personnel. DOE/RL-94-02, Section 8.3, describes action to be taken, which might include, but are not limited to, any of the following:

- Neutralization of corrosive spills
- Chemical treatment of reactive materials to reduce hazards
- Overpacking or transfer of contents from leaking containers
- Use of sorbents to contain and/or absorb leaking liquids for containerization and storage and/or disposal
- Decontamination of solid surfaces impacted by released material, e.g., intact containers, equipment, floors, containment systems, etc.
- Disposal of contaminated porous materials that cannot be decontaminated and any contaminated soil
- Containerizing and sampling of recovered materials for classification and determination for proper management
- Followup sampling of decontaminated surfaces to determine adequacy of cleanup techniques as appropriate.

Waste from cleanup activities is designated and managed as newly generated waste. A field check for compatibility before storage is performed, as necessary. Incompatible waste is not placed in the same container. Containers of waste are placed in approved storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization ensures that the cause is corrected. Examples include modification of an incompatibility chart or increased scrutiny of waste from an offsite generator or onsite generating unit when incorrectly designated waste caused or contributed to an incident.

8.4 POST EMERGENCY EQUIPMENT MAINTENANCE AND DECONTAMINATION

All equipment used during an incident is decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumables and disposable materials are restocked. Fire extinguishers are recharged or replaced.

The BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned and refilled, protective clothing is cleaned or disposed of and restocked, etc.

Factors to consider when establishing an equipment and personnel decontamination station are as follows:

- Water supplies
- Containment/catch basins and/or systems
- Personnel necessary to accomplish proper decontamination
- Protective clothing
- Decontamination supplies (buckets, brushes, soap, chemicals as needed)
- Risk to personnel
- Weather conditions [i.e., severe heat, cold (current and forecasted)]
- Toxicity of material
- Porosity of equipment to be decontaminated
- Disposal requirements of decontamination rinse
- Use of controlled zones to maintain contamination control.

9.0 EMERGENCY EQUIPMENT

Hanford Site emergency resources and equipment are described and listed in DOE/RL-94-02, Appendix C.

9.1 FIXED EMERGENCY EQUIPMENT

Central Waste Complex Fixed Emergency Equipment		
Type	**Location**	**Capability**
Dry pipe valve sprinkler system	2401-W 2402-W 2402-WB through 2402-WL 2403-WA through 2403-WD 2404-WA through 2404-WC	Assist in fire control
Sprinkler system fire department connections	Outside FS-19 and FS-20 (not labeled)	Assist in fire control
Fire Alarms	Storage buildings	Warn Personnel of Fire

9.2 PORTABLE EMERGENCY EQUIPMENT

Central Waste Complex Portable Emergency Equipment		
Type	**Location**	**Capability**
Fire extinguishers	Storage building	Fire control
Dry chemical	2401-W 2402-W through 2402-WK 2403-WA through 2403-WD 2404-WA through 2404-WC Flammable Waste Storage Modules 2120-WA and 2120-WB Sprung Structures Waste Storage Pad	Class A, B, and C fires
Metlx	Alkali Metal Waste Storage Modules	Class D fires

9.3 COMMUNICATIONS EQUIPMENT/WARNING SYSTEMS

Signal	Meaning	Actions
Continuous 3-5 minute siren	Evacuation	Leave area immediately as directed
Wavering 3-5 minute siren	Take cover alarm	Seek shelter immediately as directed
Crash phone	Relay emergency information	Respond as directed

9.4 PERSONAL PROTECTIVE EQUIPMENT

Central Waste Complex Protective Equipment		
Type	**Location**	**Capability**
Supplied air	Available from the Fire Department	Protection from airborne hazards
Full-face respirator	271-T Mask Station	Protection from airborne particulates
Self-contained breathing apparatus	Available from the Fire Department	Breathing air supplied for work in hazardous atmospheres
PPE clothing	MO-288 Conex MO-223 Conex	Personnel protection against exposure

9.5 SPILL CONTROL AND CONTAINMENT SUPPLIES

Spill control equipment to be used for dangerous, mixed, and/or radioactive waste during an emergency and/or recovery phase is as follows.

Central Waste Complex Spill Control Equipment		
Type	**Location**	**Capability**
Spill control kit	2401-W, 2402-W, 2402-WD, 2402-WH, 2402-WK 2403-WA North of 2404-WC Staging area	Cleanup organic solvents, inorganic solvents, acids, caustics, oxidizers, and polychlorinated biphenyl (PCB) spills; Radiation rope and signs

9.6 INCIDENT COMMAND POST

Buildings MO-720 and MO-438 contain areas for use in an emergency.

10.0 COORDINATION AGREEMENTS

RL has established a number of coordination agreements, or memoranda of understanding (MOU), with various agencies to ensure proper response resource availability for incidents involving the Hanford Site. A description of the agreements is contained in DOE/RL-94-02, Table 3-1.

11.0 REQUIRED REPORTS

Post-incident written reports are required for certain incidents on the Hanford Site. The reports are described in DOE/RL-94-02, Section 6.1.

12.0 PLAN LOCATION

Copies of this plan are maintained at the following locations:

- MO-720 Conference Room
- Office of the BED and alternate
- RL-EOC
- Hanford Local Area Network (HLAN)
- MO-288.

NOTE: In accordance with coordination agreements, the Hanford Fire Department provides direction during onsite event response and provides all needed information to support agencies that may be assisting the onsite responses. Therefore, only copies of plans for facilities where offsite agencies are the initial responders (e.g., 1163 Stores Building) will be provided to offsite support agencies.

13.0 BUILDING EMERGENCY ORGANIZATION

The complete building emergency organization listing of positions, names, work locations, and telephone numbers for the CWC is maintained in a separate, internally controlled document. Copies are distributed, at a minimum, to appropriate facility locations and to Hanford Site Emergency Preparedness. In addition, names and work and home telephone numbers of the BEDs and alternates are available from the Patrol Operations Center (373-3800), in accordance with the *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

14.0 REFERENCES

DOE/RL-94-02, *Hanford Emergency Response Plan*, as amended.

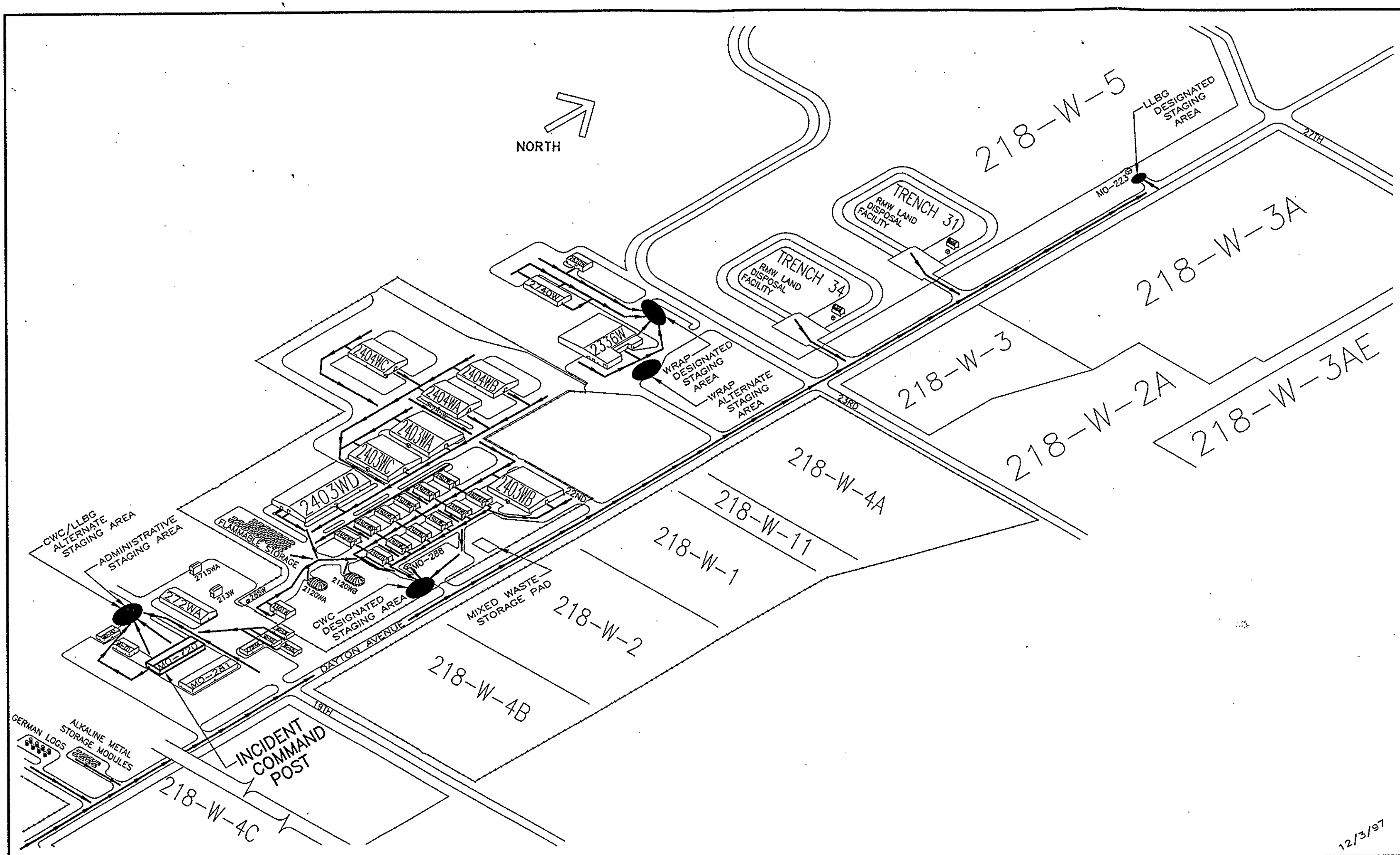
DOE Order 232.1, "Occurrence Reporting and Processing of Operations Information," U.S. Department of Energy, Washington D.C.

NIOSH, 1996, *Pocket Guide to Chemical Hazards*, National Institute of Occupational Safety and Health, U.S. Department of Health and Human Resources, Public Health Service, Centers for Disease Control, Washington, D.C.

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

Hanford Facility RCRA Permit, Dangerous Waste Portion, Washington State Department of Ecology, Olympia, Washington, as amended.

Figure 1. Overview of the Central Waste Complex



ATTACHMENT A

Listing of Procedures and Guides

Site-Wide Procedures

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-3.4, "Emergency Termination, Reentry, and Recovery"

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-1.1, "Hanford Incident Command System and Event Recognition and Classification"

Facility Specific Emergency Response Guide

HNF-IP-1294, *Solid Waste Management Emergency Response Guide*

NOTE: The *Solid Waste Management Emergency Response Guide* provides more detailed response direction for all emergencies identified in Chapter 7.0 of this Building Emergency Plan.

APPENDIX 8A

APPENDIX 8A

TRAINING

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R. W. Reddinger

R. W. Reddinger, Manager
Project Support

5-11-98
Date

R. W. Reddinger for

B. S. Darling, Training Team Leader
Project Support, Training

5-11-98
Date

R. J. Giroir

R. J. Giroir, Manager
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Date

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B. M. Barnes, Environmental Compliance Officer
Solid Waste Project

5/11/98
Date

CONTENTS

1.0 PURPOSE

This document outlines the Dangerous Waste Training Program (DWTP) for the Central Waste Complex (CWC) organization. CWC is permitted as a treatment, storage, and/or disposal (TSD) unit on the Hanford Facility. The DWTP implements the requirements of Washington Administrative Code (WAC) 173-303-330 and Title 40 Code of Federal Regulations (CFR) 264.16 for the development of a written dangerous waste training plan.

2.0 SCOPE

This DWTP applies to personnel who perform work at, or in support of, CWC. The DWTP requirements are based on an assessment of duties and responsibilities of personnel responsible for dangerous waste management (handling, treatment, storage, and/or disposal of dangerous and/or mixed waste). In addition, this training program ensures that personnel are familiar with emergency equipment and/or systems and emergency procedures to safely operate and maintain the CWC.

3.0 DEFINITIONS

NONE

4.0 RESPONSIBILITIES

Personnel responsibilities are described in the following sections.

4.1 Facility Manager

The Facility Manager has the overall responsibility to meet all training requirements of WAC 173-303-330 and Condition II.C of the Hanford Facility RCRA Permit (Ecology 1994). To meet the requirements in WAC 173-303-330(1)(a), the training director position is described in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28, Chapter 8.0). Because the Facility Manager has overall responsibility in the assignment of training for personnel, the Facility Manager is involved in directing training at CWC.

4.2 Training Manager

The training manager has overall responsibility for establishing, conducting, and administering the training program for CWC to ensure personnel are trained to meet their assigned jobs.

4.3 Facility Management

Managers, under the direction of the Facility Manager, are responsible for the following:

- Determining required training for all personnel assigned to CWC, as required by job assignment.
- Ensuring that personnel assigned to CWC receive required initial training, continuing training, and retraining as needed to be qualified to perform their assigned duties in dangerous waste management.
- Maintaining up-to-date personnel training records for assigned personnel.

4.4 Training Personnel

Training personnel are responsible for the following:

- Reviewing training requirements whenever regulations change or annually, at a minimum, for adherence to regulations and to ensure the requirements reflect the current systems, procedures, and policies applicable to each position.
- Developing and conducting training on new and existing systems or equipment.

4.5 Central Waste Complex Personnel

CWC and CWC support personnel are responsible for the following:

- Working with their managers to define applicable training
- Completing necessary training to gain/maintain qualifications.

5.0 TRAINING PROGRAM

The CWC DWTP is implemented based on training requirements related to job responsibilities.

5.1 Training Requirements

Training requirements for individual personnel are tracked in the Training Matrix (TMX).

The responsible manager reviews training requirements when personnel change positions or assume new job responsibilities, when changes are identified to this training plan (other than editorial changes), or annually, as a minimum. Updates to the training requirements are made as necessary.

Personnel must meet the training requirements within 6 months of the date of hire, within 6 months of assignment to CWC, or within 6 months of assignment to a new position within the CWC. Personnel in-training will not make decisions that could affect facility safety. Personnel independently can perform specific jobs or tasks for which they are qualified. Personnel performing work who do not meet all training requirements must be supervised by a qualified person.

As new requirements are identified and indicated in this training plan, CWC personnel will comply with the new requirements within 6 months of the effective date of the requirement.

5.2 Job Titles and Descriptions

Personnel are assigned a job title and a job description. The job description includes requisite skills, work experience, education, and other qualifications, and a brief list of duties and/or responsibilities. This information is maintained by the human resources department.

5.3 Dangerous Waste Worker Position

CWC personnel are categorized into six worker positions: (1) All Employee, (2) General Worker, (3) Advanced General Worker, (4) General Manager, (5) General Shipper, and (6) Waste Designator.

Personnel are categorized into these positions based on duties and responsibilities as determined by a job analysis or management assessment. In the event personnel duties and responsibilities fall into more than one position, personnel will complete the training requirements for each position.

The duties and responsibilities described for the positions in this section, coupled with the information described in Section 5.4, provide the necessary information to determine the training for appropriate personnel. The categories are based on duties and responsibilities of personnel associated with dangerous waste management at CWC and are provided in the following sections.

5.3.1 All Employee

Personnel included in this position are those who do not fall into one of the other five positions and have no duties or responsibilities directly associated with dangerous waste management. Typical job titles of personnel in this position include secretaries, clerks, and oversight personnel.

Most visitors, categorized as All Employee, generally tour, provide oversight, or are brought onsite for interviews. Other non-Hanford Facility personnel who gain access to the CWC to complete work in controlled areas but do not become involved in the management of dangerous waste are categorized as All Employee.

5.3.2 General Worker

Personnel with limited dangerous waste management duties, such as activities associated with the generation of dangerous waste or facility maintenance or modification, are categorized as General Workers. Typical job titles of personnel in this position include maintenance personnel, health physics technicians, and transporters.

Personnel categorized as General Workers could be assigned duties and responsibilities for the following:

- Placing waste into pre-approved containers and filling out log sheets where applicable
- Completing radiological surveys of dangerous waste
- Moving containers or loading packaged containers onto trucks

- Responding to a spill or release of known contents where duties and responsibilities are limited to containing the spill/release, returning the container to an upright position, and/or placing the known spilled material or waste into a pre-approved container.

- Applying container markings or labels based on direction from an Advanced General Worker, General Manager, or General Shipper.

5.3.3 Advanced General Worker

Personnel whose duties exceed those of a General Worker for dangerous waste management are categorized as Advanced General Workers. The typical job title of personnel in this position is Nuclear Process Operator.

Responsibilities of an Advanced General Worker for management of dangerous waste in containers can include the following:

- Determining container markings and labels
- Preparing container log sheets
- Completing waste inventories
- Sampling of waste
- Packaging and transporting waste samples
- Responding to spills and releases of waste in accordance with approved procedures
- Performing inspections and surveillances
- Receiving transfers and/or shipments of waste.

5.3.4 General Manager

Personnel identified as General Managers coordinate, direct, and oversee the work of General or Advanced General Workers in the management of dangerous waste or in the operation and control of CWC. Other duties could include responsibilities during emergency events requiring implementation of the building emergency plan. Personnel at the CWC who could be categorized as General Managers include: the operations manager (OM), team leads (TLs), environmental compliance officer (ECO), cognizant engineers (Cog Engrs), persons in charge (PIC), hazardous material specialist (HMS), and building emergency director (BED). The TMX identifies personnel currently filling these positions.

5.3.4.1 Operations Manager

OM responsibilities include the following:

- Supervising, coordinating, and directing the activities of the TLs

- Maintaining control over the CWC operations in accordance with established operating procedures and policies, DOE Orders, and federal and state regulations

- Directing, controlling, and coordinating the storage and transfer of dangerous waste

- Complying with CWC permits
- Providing guidance to TLs during abnormal or emergency conditions.

5.3.4.2 Team Leads

TLs responsibilities include the following:

- Supervising and coordinating CWC operation and maintenance activities
- Maintaining control of CWC operations in accordance with established policies and operating procedures, DOE Orders; and federal and state regulations
- Conducting pre-job safety meetings with personnel
- Maintaining operational records
- Reviewing and revising CWC operations procedures
- Recognizing and responding to abnormal and/or emergency conditions
- Supervising the storage, handling, and transfer of dangerous and/or mixed waste
- Complying with CWC permits.

5.3.4.3 Environmental Compliance Officer

ECO responsibilities include the following:

- Ensuring CWC management is aware of environmental compliance requirements and issues
- Providing support to ensure compliance with applicable environmental rules and regulations
- Serving as CWC liaison on environmental issues and permits
- Advising CWC management of emerging environmental requirements and policies, and recommending implementation strategies to ensure compliance
- Ensuring compliance with CWC permits.

5.3.4.4 Cognizant Engineers

Cog Engrs responsibilities include the following:

- Ensuring emergency and monitoring equipment, process equipment, procedures, designs, etc., comply with DOE Orders, federal and state regulations, national standards, and applicable engineering procedures and management standards

- Issuing and maintaining operation documentation, operating procedures, flowsheets, specifications, process test plans and procedures, operational safety requirements, etc.

- Performing evaluations of CWC process to ensure compliance with process control requirements and permits

- Preparing and approving engineering design documents and drawings in compliance with applicable policies, procedures, and instructions per national standards and codes

- Providing technical assistance for hazardous material and dangerous waste spill response.

5.3.4.5 Person In Charge

PIC responsibilities include providing in-field direction of tasks in progress.

5.3.4.6 Hazardous Material Specialist

HMS responsibilities include the following:

- Supervising and coordinating hazardous waste storage and transfer

- Providing approved storage containers and applicable markings

- Interfacing with other organizations to ensure proper and timely disposal of hazardous waste

- Preparing and maintaining applicable hazardous waste documentation in accordance with DOE Orders and federal and state regulations

- Ensuring non-regulated alternatives are used whenever possible

- Reviewing hazardous waste documentation and providing hazardous waste disposition instructions as required.

5.3.4.7 Building Emergency Director

BED responsibilities include the following:

- Acting as the emergency coordinator

- Assessing incidents to determine response necessary to protect the personnel, facility, and the environment

- Arranging for care of any injured personnel

- Remaining available for fire, patrol, and other authorities on the scene, and provides all required information

- Ensuring proper containerization, packaging, and labeling of recovered spill materials
- Assisting in preparing the necessary post-incident documentation.

5.3.5 General Shipper

Personnel who prepare and sign waste movement documentation for both onsite transfers or offsite shipments of dangerous waste are categorized as General Shipper.

5.3.6 Waste Designator

Personnel who perform and/or complete waste designations are categorized as a Waste Designator.

5.4 Required Training

Attachment 1 is a matrix of required RCRA training courses. Training for emergency procedures, emergency equipment, and emergency systems to meet the requirements of WAC 173-330(1)(d) is included in these courses as specified in the course description. Attachment 2 provides required training for personnel by job category.

Personnel who have completed training offsite are required to provide a certificate or other suitable evidence of training course(s) that meet the requirements of WAC 173-303 and this plan.

5.5 Non-Hanford Facility Personnel

Non-Hanford Facility personnel who perform work at CWC must complete the appropriate level of training determined by line management according to the tasks they will perform.

CWC management is responsible for ensuring that non-Hanford Facility personnel training requirements are met before granting access. Some personnel are granted access without the required training because they are either escorted or supervised by qualified personnel within CWC.

5.6 Conduct of Training

The training program uses a systematic approach to training. Training design, development, and implementation are based on learning objectives derived from the analysis of the specific job/task. Training is provided using classroom instruction, on-the-job training, required reading, computer-based training methods, and/or by providing drills. Training is developed and provided by personnel knowledgeable in dangerous waste management policies and/or procedures.

5.7 Documentation of Training

Classroom training is documented on course completion rosters, which are signed by students attending the course. Written examinations are signed by the student at the time of taking the exam and when reviewed with the instructor who grades the examination.

Training record files for CWC personnel are stored in the TMX computer database, which is accessed by the Facility Records Specialist. A report is generated from the database to inform CWC management when training for personnel is within 90 days of expiration. An example of a TMX report is included in Attachment 3. Copies of completed TSD unit-specific training certifications/qualifications are available from the CWC training department. Additional information regarding training records can be accessed through the Human Resources Information System (HRIS). The HRIS is managed by the Hanford Training Records organization.

Training records summaries for support organization personnel are also stored in the HRIS. Training records for former personnel are kept on the HRIS for 3 years from the date last worked at the CWC. Original signed and dated training records are maintained by the Hanford Training Records organization. These records are transferred quarterly to the Records Holding Facility in Richland, Washington. After approximately one year at the Records Holding Center, the original training records are archived.

5.7.1 Access of Training Records

When a training record is requested during an inspection, an electronic data storage record will be provided. If an electronic data storage record does not satisfy the inspection concerns, a hard copy training record will be provided. Training records of former personnel may not be readily available to CWC personnel and may require a representative from the Training Records organization to access this information.

5.7.2 Determining Current Training Status

The electronic data storage training record, coupled with this training plan, will give the ability to quickly determine the training status of personnel in the field.

5.7.3 Personnel List

A list of personnel for Advanced General Workers, General Managers, General Shippers and Waste Designators is maintained on TMX, including the direct link between these positions and the individuals filling the positions. The TMX is updated quarterly.

6.0 REFERENCES

DOE/RL, 1994, DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE94NM-063" dated April 14, 1994, items 3 and 4.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Washington State Department of Ecology, Olympia, Washington, modified periodically.

7.0 ATTACHMENTS

ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

ATTACHMENT 2. REQUIRED TRAINING FOR CENTRAL WASTE COMPLEX PERSONNEL

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

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ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

The following constitute the RCRA training program courses as determined by (1) WAC 173-303, (2) the Hanford Facility RCRA Permit, and (3) correspondence between DOE-RL and Ecology on dangerous waste training.

Title	**000001 Hanford General Employee Training**
Description	Course covers DOE Orders and applicable policies pertaining to employer and personnel rights and responsibilities, general radiation training, hazard communications, dangerous waste, fire prevention, personal protective equipment, safety requirements, emergency preparedness, accident reporting, and avenues for addressing safety concerns.
Mandating document(s)	Hanford Facility RCRA Permit, General Condition II.C.2 and II.C.4.
Target audience	All Hanford Facility personnel working on the Hanford Facility.
Frequency	Annual.

Title	**02006G Waste Management Awareness**
Description	Course introduces personnel to federal laws governing chemical safety in the work place. The course provides the hazardous material/waste worker with the basic fundamentals for safe use of hazardous materials and initial accumulation or storage of dangerous or mixed waste in containers. The concepts covered in this course instruct personnel on specific waste generation procedures and requirements, which include: (1) applicable waste management practices (i.e., waste stream identification, waste segregation practices, completing container logsheets, and housekeeping requirements), (2) proper responses to incidents pertaining to the waste in the accumulation containers, (3) proper responses to dealing with waste of unknown origins, and (4) proper responses to questions posed in the field concerning the above elements.
Mandating document(s)	WAC 173-303-330(1) Letter: DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE 94NM-063" dated April 14, 1994, items 3 and 4. Hanford Facility RCRA Permit, General Conditions II.C.1 and II.C.4.
Target audience	Hanford Facility personnel categorized as a General Worker, Advanced General Worker, and General Manager. Subcontractors categorized as General Workers. Other courses may provide equivalent training so that credit for this course is provided when the electronic data storage training record is generated.
Frequency	One-time only. (Annual refresher training is not required because training is adequately covered through 035110 and/or 03E047.)

Title	**020159 Advanced Course 2 - Hazardous Waste Shipper Certification**
Description	Course defines responsibilities and liabilities with regard to compliance to manifesting requirements and U.S. Department of Transportation regulations, including placarding, identifying proper shipping names, and loading requirements.
Mandating document(s)	WAC 173-303-330(1), -180, -190, and -370. Hanford Facility RCRA Permit, General Condition II.Q, as applicable
Target audience	General Shippers of dangerous or mixed waste on roadways anywhere on the Hanford Facility.
Frequency	Every 3 years.

Title	**02028B Building Emergency Director Training**
Description	Course provides an overview of the responsibilities of the Building Emergency Director, identifies the building emergency organizations and actions required during an event, discusses implementing the contingency plan, and discusses drill and exercise requirements.
Mandating document(s)	WAC 173-303-330(1), -340, -350, and -360.
Target audience	Hanford Facility personnel categorized as General Managers because they perform the responsibilities of a RCRA Emergency Coordinator through the title of Building Emergency Director or alternate (e.g., On-Call Manager).
Frequency	Initial (retrained annually by 037510 Building Emergency Director/Warden Requalification).

Title	**300020 Solid Waste Central Waste Complex Facility Operations Certification**
Description	Qualifies nuclear process operators to operate the systems associated with the CWC including management of waste in containers.
Mandating document(s)	WAC 173-303-330, -630.
Target audience	Operations personnel categorized as Advanced General Workers.
Frequency	Every 2 years.

Title	**300590 Solid Waste Manager Certification**
Description	Course is a self-study course designed to cover management topics in order to safely operate the solid waste facilities.
Mandating document(s)	WAC 173-303-330, -630, -640, -650. Hanford Facility RCRA Permit, General Conditions.
Target audience	General Managers who are categorized because they are immediate managers of Advanced General Workers who manage dangerous or mixed waste in containers, tank systems, and/or landfills.
Frequency	Every 2 years.

Title	**300700 Solid Waste Facility Orientation**
Description	Introduction to the LLBG, Central Waste Complex, 224-T Transuranic Waste Storage and Assay Facility, and 616 Nonradioactive Dangerous Waste Storage Facility including facility missions, hazards, and emergency response procedures.
Mandating document(s)	WAC 173-303-330 Hanford RCRA Permit, General Condition II.C.
Target audience	All personnel assigned to, or working at, Central Waste Complex.
Frequency	Every 2 years.

Title	035010 Waste Designation
Description	Course teaches dangerous waste designation according to WAC 173-303. Class content includes section-by-section lecture on the regulations, with examples following each section. Students complete examples using a waste designation flow chart. Examples addressed include: listed waste, characteristic waste, and Washington State criteria of toxicity and persistent.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	General Shippers and Waste Designators.
Frequency	One-time only. (Annual retrain is only required for those personnel who are required to complete 035012.)

Title	035012 Waste Designation Qualification
Description	Course provides qualification to be a Waste Designator.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	Waste Designators.
Frequency	Annual.

Title	035020 Facility Waste Sampling and Analysis
Description	Course presents waste sampling methodologies according to U.S. Environmental Protection Agency Protocols SW-846, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods". This course also covers documentation requirements in a sampling plan and/or waste analysis plan, field and laboratory quality control/assurance, the data quality objectives process, and use of actual sampling equipment as specified by WAC 173-303-110. Finally, topics on listed waste management pertaining to sample management and available onsite sampling services are covered.
Mandating document(s)	WAC 173-303-330(1), -070, -110, and -300.
Target audience	General Managers and/or General Shippers because they perform responsibilities for sampling waste or effluent streams.
Frequency	One-time only.

Title	**035100 Container Waste Management - Initial**
Description	Course covers general training requirements pertaining to waste management of container in less-than-90-day accumulation areas and TSD units. The course incorporates WAC 173-303-200(1), -630, DOE Orders, and container management policy. Course includes practical exercises for hands-on experience with the packaging of dangerous or mixed waste, and preparation of packages for final destination. This course does not cover waste management aspects pertaining to other RCRA waste management units such as tank systems, surface impoundments, containment buildings, landfills, etc.
Mandating document(s)	WAC 173-303-330(1), -630, -200(1) and waste minimization.
Target audience	Advanced General Workers and General Managers, because they are immediate managers of or direct Advanced General Workers, who manage containers of dangerous or mixed waste.
Frequency	Initial (refresher annually by 035110 Core Waste Management Training).

Title	**035110 Container Waste Management - Refresher**
Description	Refresher Course for Container Waste Management - Initial.
Mandating document	WAC 173-303-330(1), -630, -200(1), and waste minimization.
Target audience	Advanced General Workers and General Managers categorized because they are immediate managers of or direct Advanced General Workers who manage dangerous or mixed waste in containers.
Frequency	Annual.

Title	**035120 Waste Management Administration - Initial**
Description	Course is designed for personnel preparing to become shippers of dangerous and/or mixed waste. This course covers regulatory and onsite policies, forms, reports, forecasts, and plans. Topics also covered include: waste characterization, waste certification summaries, waste specification system, and solid waste storage/disposal records. In addition, students learn how these forms are used to complete shipping papers.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers categorized because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Initial (refresher annually by 035130 - Waste Management Administration).

Title	**035130 Waste Management Administration - Refresher**
Description	Refresher course for Waste Management Administration - Initial.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers categorized because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Annual.

Title	**037510 Building Emergency Director/Warden Requalification**
Description	Refresher for Building Emergency Director Training.
Mandating document(s)	WAC 173-303-330, -340, -350, and -360.
Target audience	General Managers categorized because they have the responsibilities of the RCRA Emergency Coordinator.
Frequency	Annual.

Title	**03E047 Building Emergency Plan for HNF-IP-0263-CWC**
Description	Course consists of a review of specific chemical hazards associated with operating the Central Waste Complex, as covered by the Central Waste Complex Building Emergency Plan. The training is completed by the supervisor, manager, or a designated individual. Information reviewed includes hazards in the work area and emergency response requirements, including communication and alarm systems, response to groundwater contamination incidents, and response to fires.
Mandating document(s)	WAC 173-303-330(1)(d), -340, -350, and -360.
Target audience	Central Waste Complex personnel categorized as General Workers, Advanced General Workers, and General Managers.
Frequency	Annual.

ATTACHMENT 2. REQUIRED TRAINING FOR CENTRAL WASTE COMPLEX

Position	Job Title	Required Training
All Employee	All other Job Titles not specifically listed.	000001 300700
General Worker	Radiological Control Technician, Maintenance Personnel (Electrician, Instrument Technician, Insulator, Millwright, Painter, Pipefitter, Power Operator, Process Crane Operator, Rigger, Sign Painter, Truck Driver, Welder), Maintenance Manager, Radiological Control Manager.	000001 02006G 03E047 300700
Advanced General Worker	Nuclear Process Operator	000001, 02006G, 035100/035110, 03E047, 300020, 300700
General Manager	Operations Manager/Team Leader	000001, 02006G, 02028B/037510, 035100/035110, 03E047, 300590, 300700
	Environmental Manager/Team Leader	000001, 02006G, 035010, 035020, 035100/035110, 03E047, 300700
	Environmental Compliance Officer	000001, 02006G, 035010, 035020, 035100/035110, 03E047, 300700
	Environmental Engineer/Scientist Plant Engineer (Environmental)	000001, 02006G, 035010, 035020, 035100/035110, 03E047, 300700
	Hazardous Material Specialist	000001, 02006G, 035010, 035020, 035100/035110, 03E047, 300700
	Building Emergency Director	000001, 02006G, 02028B/037510, 035100/035110, 03E047, 300700

Position	Job Title	Required Training
General Shipper	Shipper	000001, 02006G, 020159, 035010, 035100/035110, 035120/035130, 03E047, 300700
Waste Designator	Waste Designator	000001, 035010, 035012, 03E047, 300700

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

CWC POSITION TRAINING REPORT

Tracking Code: Matrix Last Modified on 05/16/98 05/20/98 Position 1
Manager: 30 Days Delinquent Forecast 15:04:38 7 Sheet 1 of 1
Organization : Operations
Position: TIMS - Nuclear Process Operator (Advanced General Worker)

	Course No.	Title	Retrain Course	Individual #1
M	000001	HGET	000001	01/26/99
M	020010	CRIT SAFETY - FISSILE	020110	09/03/99
M	02006G	WASTE MANAGEMENT AWARENESS	———	OK
M	020075	HAZ MAT GEN AWARENESS TRNG	020075	11/14/98
M	020301	CRIT SFTY JSO-FSSL	020301	09/03/99
M	031110	24 HR RCRA TSD HAZ WASTE	032020	10/16/98
M	035100	CONTAINER WASTE MGT. INITIAL	035110	07/11/98
M	03E044	BLDG EMERG PLAN - LLBG	03E044	07/17/98
M	03E045	BLDG EMERG PLAN - 616	03E045	07/17/98
M	03E046	BLDG EMERG PLAN - 224T	03E046	07/17/98
M	03E047	BLDG EMERG PLAN - CWC	03E047	07/17/98
M	300700	SOLID WASTE FAC ORIENTATION	300700	07/17/99
M	301740	SW MGMT HAZ COMM	301740	07/17/98
D	065911	MATHEMATICS	———	OK
D	065912	NPO CORE CHEMISTRY	———	OK
D	065914	NPO CORE ELECTRICAL	———	OK
D	065915	NPO CORE INSTRUMENTATION	———	OK
D	065917	NPO CORE MECHANICAL	———	OK
m	003035	LOCK & TAG: CO INITIAL	003036	****
m	020001	RAD WORKER II INITIAL	020003	01/13/99
m	020030	SCBA INITIAL TRAINING	02R030	<<11/20/97>>
m	020032	SCOTT SKA-PAK AIRLINE SYS-INIT	02R032	<<11/20/97>>
m	020035	MSA PAPR (FULL FACEPIECE) INIT	02R035	****
m	020041	RESPIRATORY PROTECTION INITIAL	02R041	<<04/16/98>>
m	020044	QUANTITATIVE MASK FIT	020044	04/14/99
m	02006L	ASBESTOS AWARENESS	02006L	02/10/99
m	020077	HAZ MAT DRIVERS TRNG - UNIT 1	020077	04/15/01
m	020130	CONFND SPC ENTRY (CSE)	———	OK
m	020140	FALL PROTECTION TRAINING	———	OK
m	020702	RAD WORKER REFRESHER TRAINING	020702	01/26/00
m	040784	BASIC CRANE & RIGGING SAFETY	040788	11/07/00
d	000080	SECURITY REFRESHER BRIEF	000080	****
d	000390	OJT TRAINING WORKSHOP	———	OK
d	000397	OJE TRAIING	———	
d	03E048	BLDG EMERG PLAN - T PLANT	03E048	
d	042720	AERIAL LIFT OPER TRNG	043920	08/13/99
d	044383	USERS SCAFFOLD SAFETY	044383	11/12/00
d	044470	FORKLIFT OPERATNL SAFETY	041890	06/10/99
d	170055	QTRC - CERT ASBESTOS WORKER	170057	
d	170500	BASIC MEDIC FIRST AID	170535	07/30/99
d	170656	HANDS-ON FIRE EXTINGSHR	170656	03/25/99
d	450700	FCLTY ORIENT - T PLANT	450700	
c	300020	CENTRL WST COMPLX OC	300020	09/30/98
c	300025	SW MIXED WST LAND DISP FAC OP	300025	10/28/98
c	300030	SOLID WST TRANSURANIC STOR/ASS	300030	10/30/98
c	300040	LOW LVL BURIAL GRND FAC	300040	09/04/99
c	300050	NON-RAD DWSF OPER CERT	300050	09/30/98

LEGEND:

Upper case (M/D/C/P)	= Course needed by all	Date	= Course retrain date
Lower case (m/d/c/p)	= Course needed by some	OK	= Course taken; no retrain required
*	= Retrain not to be maintained	****	= Course taken; retrain requirement not maintained
<< >>	= Course delinquent	Blank	= Course not needed (lower case) and not taken
/ /	= Course needed (upper case) but not taken		

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