

HWMA/RCRA STORAGE and TREATMENT PERMIT
for the
MATERIALS AND FUELS COMPLEX (MFC)

ATTACHMENT 8

Section I – Closure Plan

EFFECTIVE DATE: OCTOBER 1, 2015

I.	CLOSURE PLANS [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(13) and 264.111 through 264.115]	I-1
I-1	Closure Plan Overview	I-1
I-2	Closure Performance Standard [IDAPA 58.01.05.008; 40 CFR 264.111 and 264.112(b)(1) and (b)(2)].....	I-7
I-3	Partial Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]	I-9
I-4	Maximum Waste Inventory [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]	I-9
I-5	Disposal or Decontamination of Equipment, Structures, and Soils [IDAPA 58.01.05.008; 40 CFR 264.112(b)(4) and 264.114]	I-9
I-6	Closure of Container Storage/Process Areas [IDAPA 58.01.05.008; 40 CFR 264.178]	I-9
I-7	Closure of Tanks [IDAPA 58.01.05.008; 40 CFR 264.197]	I-10
I-7(a)	Closure of SCMS Tanks/Tank Systems and Ancillary Equipment	I-10
I-8	Closure of Miscellaneous Unit [IDAPA 58.01.05.008; 40 CFR 264.600]	I-10
I-9	Ancillary Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(5)]....	I-10
I-10	Schedule for Closure and Notification of Closure [IDAPA 58.01.05.008; 40 CFR 264.112(b)(6) and (d)].....	I-11
I-10(a)	Extensions for Closure Time [IDAPA 58.01.05.008; 40 CFR 264.113(a) and (b)].....	I-13
I-11	Certification of Closure [IDAPA 58.01.05.008; 40 CFR 264.115]	I-13
I-12	Post-Closure Plan [IDAPA 58.01.05.009; 40 CFR 264.110(b)(1)]	I-13
I-13	Post-Closure Notices [IDAPA 58.01.05.009; 40 CFR 264.119]	I-13
I-14	Closure Cost Estimate [IDAPA 58.01.05.009; 40 CFR 264.142]	I-13
I-15	Financial Assurance Mechanism for Closure [IDAPA 58.01.05.009; 40 CFR 264.143]	I-14
I-16	Post-Closure Cost Estimate [IDAPA 58.01.05.009; 40 CFR 264.144]	I-14
I-17	Financial Assurance Mechanism for Post-Closure Care [IDAPA 58.01.05.009; 40 CFR 264.145]	I-14
I-18	Liability Requirements [IDAPA 58.01.05.009; 40 CFR 264.147]	I-14
I-19	Use of State Required Mechanism and State Assumption of Responsibility [IDAPA 58.01.05.009; 40 CFR 264.149]	I-14

EXHIBITS

Exhibit I-1.	HWMA Unit Multi-Step Closure Process	I-3
Exhibit I-2.	HWMA Unit General Housekeeping and Cleanup.....	I-4
Exhibit I-3.	HWMA Unit Preliminary Review and Visual Site Inspection (PR/VSI)	I-5
Exhibit I-4.	Facility Investigation and Decontamination (FI&D) for Building/Equipment Sealed or Impermeable, and Cracked or Nonsealed Surfaces	I-6
Exhibit I-5.	Preliminary Closure Performance Standards for Sealed or Impermeable Surfaces and Cracked or Nonsealed Surfaces	I-8
Exhibit I-6	Partial Closures at MFC.....	I-9
Exhibit I-7.	HWMA Unit Schedule for Closure.....	I-12

I. CLOSURE PLANS [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(13) and 264.111 through 264.115]

In accordance with the requirements of the Idaho Administrative Procedures Act (IDAPA) 58.01.05.008 and 58.01.05.012, and 40 Code of Federal Regulations (CFR) 264.111 through 264.115 and 270.14(b)(13), this section of the Materials and Fuels Complex (MFC) Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) Permit Application describes the closure plans that will be implemented at each MFC HWMA unit prior to and during closure of the HWMA unit. Implementation of the closure plans will ensure that the HWMA units are closed in a manner that will protect human health and the environment.

The information provided in this section is organized by subsection as follows:

- Subsection I-1, Plan Overview
- Subsection I-2, Closure Performance Standard
- Subsection I-3, Partial Closure Activities
- Subsection I-4, Maximum Waste Inventory
- Subsection I-5, Disposal or Decontamination of Equipment, Structures, and Soil
- Subsection I-6, Closure of Container Storage/Process Areas
- Subsection I-7, Closure of Tanks
- Subsection I-8, Closure of Miscellaneous Units
- Subsection I-9, Ancillary Closure Activities
- Subsection I-10, Schedule for Closure and Notification for Closure
- Subsection I-11, Certification of Closure

I-1 Closure Plan Overview

The HWMA units will be closed using a multi-step review and evaluation closure process (ref. Exhibit I-1) to ensure successful closure and certification to the applicable clean closure performance standards. The actual closure activities and clean closure performance standards may differ among HWMA units (different HWMA units have different operational processes to close), but the multi-step closure process itself is the overall general approach for closure of all the HWMA units. Exhibit I-1 illustrates this multi-step closure process. A detailed description of the multi-step closure process is provided in Exhibits I-2 through I-5. After approval to close a HWMA unit is received from the Idaho Department of Environmental Quality (DEQ), the multi-step process begins with waste transfer, treatment, and/or decontamination activities specific to the HWMA unit. Any waste generated during closure activities is characterized,

1 packaged, and managed as hazardous waste/mixed waste (HW/MW), as
2 applicable. Based on the results of the Preliminary Review and Visual Site
3 Inspection (PR/VSI), if closure standards have been met, closure will be certified
4 by a registered professional engineer (PE) and a closure certification report will
5 be sent to the DEQ. If closure performance standards cannot be met, a Facility
6 Investigation and Decontamination (FI&D) will be performed and if closure
7 standards are still not met, a revised closure plan will be prepared and submitted
8 to DEQ for review and approval.

9 In the future, as the actual closure of any MFC HWMA unit is considered, this
10 closure plan will be modified to reflect any information or condition that has
11 changed or occurred and may precipitate different closure options and to address
12 HWMA unit specific clean closure performance standards. This closure plan will
13 be modified in accordance with IDAPA 58.01.05.008 and 40 CFR 264.112(c)

14 .

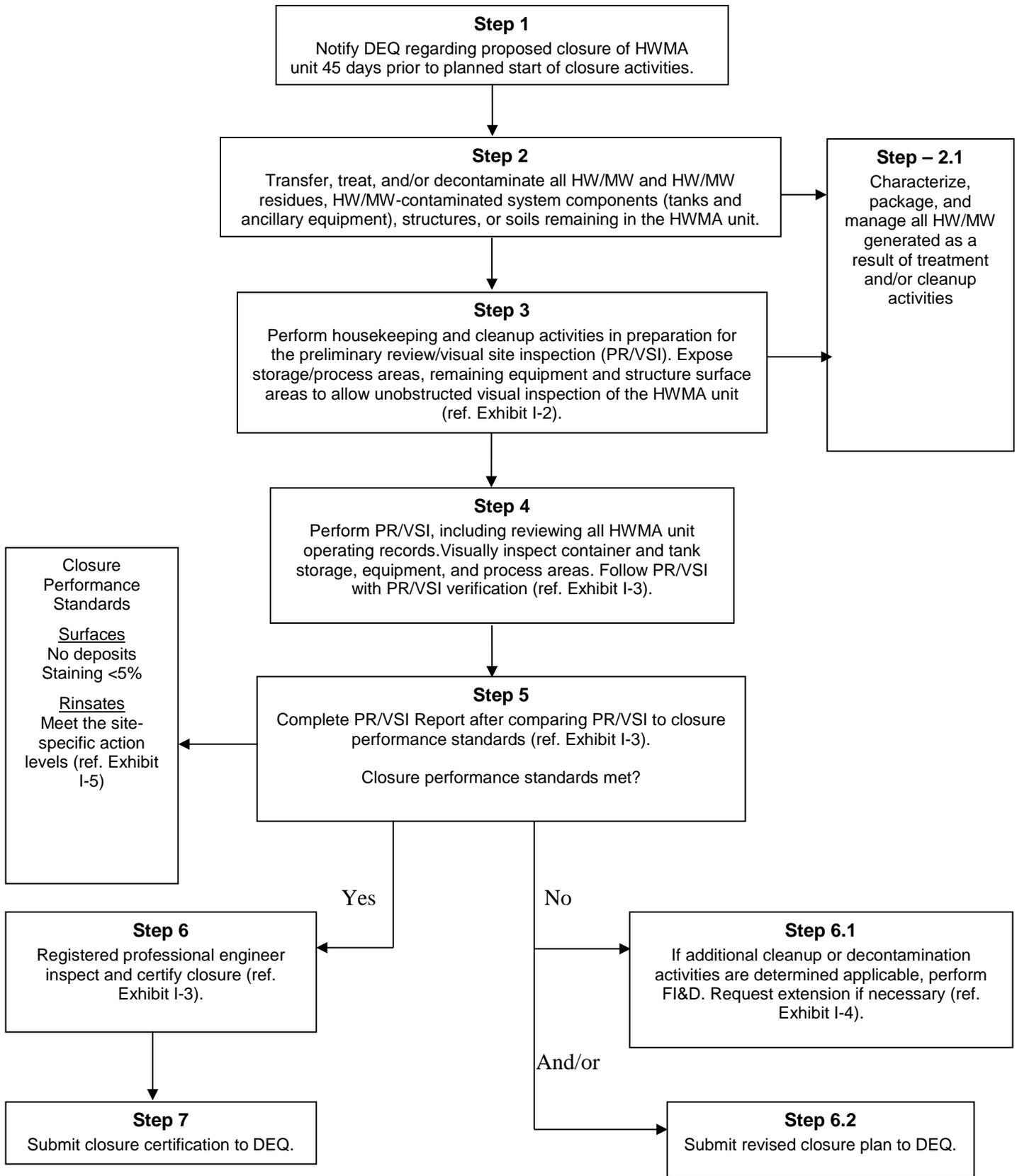


Exhibit I-2. HWMA Unit General Housekeeping and Cleanup	
Objective	Prepare HWMA unit for PR/VSI and final closure.
Prior Activity	Transfer, treat, and/or decontaminate all HW/MW, HW/MW residues, HW/MW-contaminated system components and equipment (tanks and ancillary equipment), structures, or soils remaining in the HWMA unit.
Housekeeping/ Cleanup	<p>Perform the following housekeeping and cleanup activities as necessary:</p> <ul style="list-style-type: none"> • Perform general housekeeping and cleanup of the entire facility in preparation for the PR/VSI. • Expose the surfaces of the facility structures, tanks, and ancillary equipment to accommodate an unimpaired visual inspection of the facility • Collect non-HWMA waste or HW/MW generated as a result of housekeeping and cleanup activities (which generally consists of rags and personnel protective equipment). • All HW/MW generated as a result of housekeeping activities will be characterized, packaged, and managed in accordance with applicable procedures and requirements. • If evidence or suspect evidence of HW/MW exists, perform additional housekeeping and cleanup activities.
Conclusion	Proceed to PR/VSI as described in Exhibit I-3.

1

Exhibit I-3. HWMA Unit Preliminary Review and Visual Site Inspection (PR/VSI)	
Objective	Prepare to compare PR/VSI results to closure performance standards ⁽¹⁾ in order to prepare PR/VSI Report. This report will determine if the HWMA unit can be closed without further closure activities or if further FI&D must be performed.
Prior Activity	General housekeeping and cleanup activities have been performed as described in Exhibit I-2.
Preliminary Review (PR) Development of Closure Performance Standard ⁽¹⁾	Review the HWMA unit operating records for the following, which will allow development of final performance closure standards ⁽¹⁾ and enable comparison to the standards in the PR/VSI Report: <ul style="list-style-type: none"> • HW/MW codes stored in HWMA units • HW/MW constituents of concern • HW/MW matrixes of concern • HWMA unit design and operating characteristics • HW/MW inventory records and Waste Stream Profiles • Previous release cleanup records (if applicable) • Previous decontamination records (if applicable) • Housekeeping/cleanup activities and records.
Visual Site Inspection (VSI) ⁽²⁾	Visually inspect the entire facility and surfaces for evidence that HW/MW may exist as indicated by HW/MW residuals remaining (deposits or staining).
PR/VSI-Verification	If no evidence of HW/MW deposits/staining exists, perform a radiological survey and/or a wipe survey and analyze for radioactivity and/or hazardous constituents. If evidence of HW/MW deposits or stains exists, perform FI&D (ref. Exhibit I-4).
Finalize Closure Performance Standards ⁽¹⁾ PR/VSI Report	Closure Performance Standards ⁽¹⁾ (ref. Subsection I-5) will include action levels for pH and hazardous constituents, visible deposits and/or staining. Based on the PR/VSI: <ul style="list-style-type: none"> • Develop a PR/VSI Report based on comparison of HWMA unit PR/VSI to closure performance standards. • Specify if closure performance standards have/have not been met with recommendations from MFC management.
Conclusion	<ul style="list-style-type: none"> • If the closure performance standards have been met, perform closure certification using a registered PE and submit the certification report to DEQ. • If closure performance standards have not been met, complete a FI&D.

1 (1) The closure plan will be modified, in accordance with IDAPA 51.01.05.008 and 40 CFR 264.112(c), to include
2 the HWMA unit specific final performance closure standards prior to implementation of the closure plan.

3 (2) HWMA unit specific visual site inspection requirements and the visual inspection procedures will be included
4 in the closure plan that will be modified in accordance with IDAPA 51.01.05.008 and 40 CFR 264.112(c).

Exhibit I-4. Facility Investigation and Decontamination (FI&D) for Building/Equipment Sealed or Impermeable, and Cracked or Nonsealed Surfaces	
Objective	Meet PR/VSI Report closure performance standards and obtain closure certification.
Prior Activities	PR/VSI-verification has been performed as described in Exhibit I-3. Closure performance standards have not been met.
Facility Investigation and Decontamination (FI&D)	<p>By performing the following actions, contamination on building/equipment surfaces is eliminated:</p> <ul style="list-style-type: none"> • Determine hazardous constituents of concern (identified in PR/VSI Report). • Determine released HW/MW matrixes (identified in PR/VSI Report). • Visually (with the naked eye) inspect surfaces. Are there stains evident greater than 5% per square inch? For sealed or impermeable surfaces, are cracks present? For cracked or nonsealed surfaces, are stains present on cracked surfaces? • If yes and the surface is sealed or impermeable, wipe or rinse down the area. If yes and the surface/media is cracked or nonsealed, take a sample of the surface area/media. Analyze the rinsate⁽¹⁾, wipes, and/or samples for hazardous constituents of concern. <ul style="list-style-type: none"> • If hazardous constituents are not detectable above action levels, perform closure certification (i.e., closure performance standards have been met). • If hazardous constituents are detected above the appropriate action levels, perform decontamination using water washing and spraying, solvent extraction, or an equivalent technology (IDAPA 58.01.05.011 and 40 CFR 268.45). When hazardous constituents are no longer detected above action levels, perform closure certification (i.e., closure performance standards have been met). • If hazardous constituents continue to be present, a revised closure plan can be submitted to DEQ.
PR/VSI-Verification	Return to PR/VSI-Verification (ref. Exhibit I-3).
Finalize Closure Performance Standards PR/VSI Report	Return to PR/VSI Report (ref. Exhibit I-3).
Conclusion	<ul style="list-style-type: none"> • If the closure performance standards have been met, perform closure certification using a registered PE and submit to DEQ. • If closure performance standards specified in the PR/VSI Report cannot be met, submit a revised closure plan to DEQ and return to PR/VSI.

1 (1) Rinsate and associated sample/analysis details will be included in the closure plan that will be modified in
2 accordance with IDAPA 51.01.05.008 and 40 CFR 264.112(c).

1 **I-2** **Closure Performance Standard [IDAPA 58.01.05.008; 40 CFR 264.111 and**
2 **264.112(b)(1) and (b)(2)]**

3 This closure plan is designed to ensure that the HWMA units will not require
4 further maintenance and controls after closure. Implementation of the plan will
5 minimize or eliminate any threats to human health and the environment and post
6 closure release of HW/MW to ground or surface waters or to the atmosphere.

7 The HWMA unit is designed and operated in a manner that minimizes the
8 potential for contamination of the facility structures and surrounding property.
9 HW/MW storage and handling activities are limited to specific areas. The facility
10 designs, coupled with frequent inspections and corrective maintenance, provide
11 safe operations that will minimize the need for cleanup and decontamination at
12 closure. All HW/MW inventories will be transferred to a HWMA storage or
13 treatment facility prior to closure.

14 Final closure of the HWMA unit will be performed in a manner that achieves the
15 closure performance standards defined in Exhibit I-5 and will:

- 16 • Minimize the need for further maintenance and controls after closure of
17 the HWMA unit
- 18 • Control, minimize, and/or eliminate to the extent necessary to protect
19 human health and the environment, the post-closure release of HW/MW
20 to the ground, water, or atmosphere from the HWMA unit
- 21 • Comply with all applicable federal and state regulatory closure
22 requirements for closure of the HWMA unit.

Exhibit I-5. Preliminary Closure Performance Standards for Sealed or Impermeable Surfaces and Cracked or Nonsealed Surfaces				
Sample Matrix	Evaluation Method	Standard	Action Levels	Analytical Method
Final water rinsate for impermeable surfaces	Analysis	pH ≤ 12.5 pH ≥ 2	pH ≥ 12.5 pH ≤ 2	pH meter
HW/MW deposits	Visual ⁽¹⁾	no deposit	deposit visible	naked eye or camera, as applicable
HW/MW staining	Visual	≤ 5% per square inch	≥ 5% per square inch	naked eye or camera, as applicable
Final water rinsate ⁽²⁾ for impermeable surfaces Porous surfaces samples or wipe samples ⁽²⁾	Compare contaminants of concern to action levels	< Action Levels	TBD ⁽²⁾	TBD ⁽²⁾

- 1 (1) Visual Deposits detectable by the human eye. A visual examination of surface areas (floor, tanks, equipment,
2 piping and valves) will be performed looking for signs of leaks and/or residuals.
3 (2) The closure plan will be modified, in accordance with IDAPA 51.01.05.008 and 40 CFR 264.112(c), to
4 include the HWMA unit specific final performance closure standards and demonstration methods prior to
5 implementation of the closure plan.
6

1 The closure process will be performed in accordance with a DEQ approved
2 closure plan and will be certified by a registered PE.

3 To ensure personnel safety during the performance of closure activities:

- 4 • Closure activities will be supervised and performed by qualified MFC
5 personnel in accordance with comprehensive safety procedures.
- 6 • Personnel performing closure activities will be trained to adhere to
7 applicable procedures and equipped with proper personal protective
8 equipment (PPE).
- 9 • Personnel and equipment will be decontaminated to established MFC
10 radiological control levels prior to leaving any contaminated work area.

11 **I-3 Partial Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]**

12 Partial closure is allowed at MFC.

13 **I-4 Maximum Waste Inventory [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]**

14 The maximum inventory of HW and MW in container and/or tank storage at any
15 time during the operational life of each HWMA unit is provided in the MFC
16 HWMA/RCRA Partial Permit Attachment 1, Part A and in Section B, MFC
17 Facility Description, Table B-1.

18 **I-5 Disposal or Decontamination of Equipment, Structures, and Soils [IDAPA
19 58.01.05.008; 40 CFR 264.112(b)(4) and 264.114]**

20 During closures of the HWMA unit, all equipment, structures and soils
21 contaminated/suspect contaminated with HW/MW (including HW/MW waste
22 generated as a result of closure activities) will be disposed of/decontaminated in
23 accordance with all applicable regulations. Subsection I-1 and Exhibits I-1
24 through I-5 provide detailed descriptions of the actions necessary to prepare the
25 HWMA unit for closure certification.

26 **I-6 Closure of Container Storage/Process Areas [IDAPA 58.01.05.008; 40 CFR
27 264.178]**

28 Prior to closure, all HW managed in containers will be removed, transported to,
29 and managed in an on-Site or off-Site storage and disposal unit. Container
30 storage units may be closed in compliance with IDAPA 58.01.05.008 (40 CFR
31 264.178) upon verification and documentation that none of the HW/MW
32 containers stored in the unit had been breached. HWMA unit container storage
33 and/or process areas will be closed using a multi-step review and evaluation
34 closure process to ensure successful certification of the clean closure
35 performance standards. Exhibit I-1 illustrates the multi-step closure process that

1 will be implemented. Detailed descriptions of the steps in the process are
2 provided in Exhibits I-2 through I-4.

3 In the future, as the actual closure of any MFC HWMA unit is considered, this
4 closure plan will be modified to reflect any information or condition that has
5 changed or occurred and may precipitate different closure options and to address
6 HWMA unit specific clean closure performance standards. This closure plan will
7 be modified in accordance with IDAPA 58.01.05.008 and 40 CFR 264.112(c).

8 **I-7 Closure of Tanks [IDAPA58.01.05.008; 40 CFR 264.197]**

9 **I-7(a) Closure of SCMS Tanks/Tank Systems and Ancillary Equipment**

10 SCMS has three tank systems requiring closure; the water wash system, scrubber
11 water system, and carbonation system. These tank systems will be closed using a
12 multi-step review and evaluation closure process to ensure successful
13 certification of the clean closure performance standards. Exhibit I-1 illustrates
14 the multi-step closure process that will be implemented during closure. Detailed
15 descriptions of the steps in the process are provided in Exhibits I-2 through I-4.

16 In the future, as the actual closure of the SCMS tanks/tank systems and ancillary
17 equipment is considered, this closure plan will be modified to reflect any
18 information or condition that has changed or occurred and may precipitate
19 different closure options and to address HWMA unit specific clean closure
20 performance standards. This closure plan will be modified in accordance with
21 IDAPA 58.01.05.008 and 40 CFR 264.112(c).

22 **I-8 Closure of Miscellaneous Unit [IDAPA58.01.05.008; 40 CFR 264.600]**

23 The Radioactive Scrap and Waste Facility (RSWF) will be closed as a
24 miscellaneous unit following the same multi-step review and evaluation closure
25 process to ensure successful certification of the clean closure performance
26 standards. Exhibit I-1 illustrates the multi-step closure process that will be
27 implemented. Detailed descriptions of the steps in the process are provided in
28 Exhibits I-2 through I-4.

29 In the future, as the actual closure of the RSWF is considered, this closure plan
30 will be modified to reflect any information or condition that has changed or
31 occurred and may precipitate different closure options and to address HWMA
32 unit specific clean closure performance standards. This closure plan will be
33 modified in accordance with IDAPA 58.01.05.008 and 40 CFR 264.112(c).

34 **I-9 Ancillary Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(5)]**

1 Ancillary closure activities, for example, groundwater monitoring, will only be
2 performed if ground water contamination is encountered during PR/VSI and
3 FI&D.

4 **I-10 Schedule for Closure and Notification of Closure [IDAPA 58.01.05.008; 40**
5 **CFR 264.112(b)(6) and (d)]**

6 If the HWMA unit is not closed prior to the permit expiration date, a new
7 application will be submitted extending the closure date an additional 10 years.

8 The Director, State of Idaho, DEQ, will be notified in writing, with the submittal
9 of a closure plan, at least 45 days prior to the expected date that closure activities
10 will begin. The closure process for the HWMA unit will be completed within
11 180 days following the removal of the final volume of HW/MW, or the approval
12 of the closure plan, whichever is the latest. However, if a revised closure plan is
13 determined to be applicable, an extension will be requested 30 days before
14 day 180. The closure schedule for the HWMA unit is shown in Exhibit I-7.

Exhibit I-7. HWMA Unit Schedule for Closure		
Process Step	Activity	Day Completed
1	Notify the DEQ 45 days prior to the planned start of closure of the HWMA unit.	45 days before
2	Transfer, treat, and/or decontaminate all HW/MW, HW/MW residues, HW/MW contaminated system components and equipment (tanks, ancillary equipment, secondary containment), structures, or soils remaining in the HWMA unit.	Day 90
3	Perform general housekeeping and cleanup activities to expose surfaces and allow unobstructed visual inspection of the facility in preparation for the PR/VSI.	Day 135
4	Perform PR/VSI, including review of the applicable HWMA unit operating records, and visually inspect container and tank storage/process areas, as applicable. Closure performance standards can be finalized as a result of this activity. The PR/VSI includes conducting a PR/VSI verification.	Day 150
5	Complete PR/VSI Report after comparing PR/VSI to closure performance standards. Determine if closure performance standards have been met.	Day 150
6	If closure performance requirements have been met, inspect and certify closure using a registered PE.	Day 180 or per DEQ extension
7	Submit closure certification report to DEQ.	w/in 60 days of closure

1

1 **I-10(a) Extensions for Closure Time [IDAPA 58.01.05.008; 40 CFR 264.113(a) and**
2 **(b)]**

3 Planned closure of the HWMA unit is not expected to exceed 180 days.
4 However, if a revised closure plan is determined to be applicable, an extension
5 will be requested 30 days before Day 180.

6 **I-11 Certification of Closure [IDAPA 58.01.05.008; 40 CFR 264.115]**

7 At the conclusion of the closure process, the registered PE will certify that
8 closure has been successfully completed in accordance with this closure plan,
9 and the closure performance standard(s) has (have) been achieved. The
10 certification will be submitted within 60 days of the closure to the:

11 Director, c/o Hazardous Waste Program Manager
12 Idaho Department of Environmental Quality
13 1410 North Hilton
14 Boise, ID 83706
15

16 A Final PR/VSI Closure Report will be written documenting compliance with
17 the closure plan and plans for the final disposition of the waste generated as a
18 result of the closure. The closure report will be retained as part of the HWMA
19 unit operating records.

20 **I-12 Post-Closure Plan [IDAPA 58.01.05.009; 40 CFR 264.110(b)(1)]**

21 Because the MFC HWMA units are to be clean closed and are not disposal
22 facilities, the post-closure requirements of IDAPA 58.01.05.009 and 40 CFR
23 264.116 through 264.120 do not apply.

24 **I-13 Post-Closure Notices [IDAPA 58.01.05.009; 40 CFR 264.119]**

25 This requirement does not apply because post-closure plans are not required.

26 **I-14 Closure Cost Estimate [IDAPA 58.01.05.009; 40 CFR 264.142]**

27 Under IDAPA 58.01.05.009 and 40 CFR 264.140(c), the Federal government, as
28 owner of the INL, is exempt from requirements to provide cost estimates for
29 closure.
30

- 1 **I-15** **Financial Assurance Mechanism for Closure [IDAPA 58.01.05.009; 40 CFR**
2 **264.143]**
- 3 Under IDAPA 58.01.05.009 and 40 CFR 264.140(c), the Federal government, as
4 owner of the INL, is exempt from requirements to provide a financial assurance
5 mechanism for closure.
- 6 **I-16** **Post-Closure Cost Estimate [IDAPA 58.01.05.009; 40 CFR 264.144]**
- 7 This requirement does not apply because post-closure plans are not required.
- 8 **I-17** **Financial Assurance Mechanism for Post-Closure Care [IDAPA**
9 **58.01.05.009; 40 CFR 264.145]**
- 10 This requirement does not apply because post-closure plans are not required.
- 11 **I-18** **Liability Requirements [IDAPA 58.01.05.009; 40 CFR 264.147]**
- 12 Under IDAPA 58.01.05.009 and 40 CFR 264.140(c), the Federal government, as
13 owner of the INL, is exempt from liability requirements.
- 14 **I-19** **Use of State Required Mechanism and State Assumption of Responsibility**
15 **[IDAPA 58.01.05.009; 40 CFR 264.149]**
- 16 Under IDAPA 58.01.05.009 and 40 CFR 264.140(c), the Federal government, as
17 owner of the INL, is exempt from these requirements.