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**ADDENDUM H
CLOSURE PLAN**

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CLOSURE PLAN

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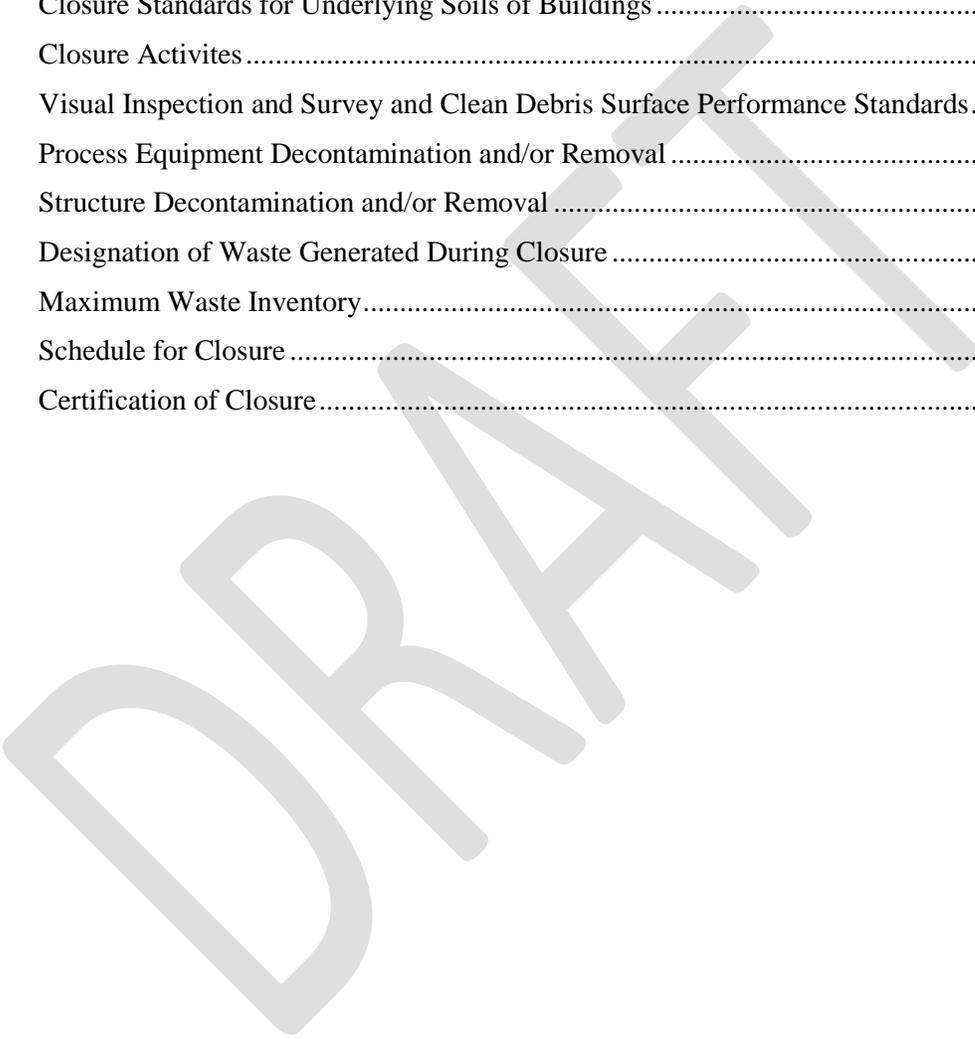
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1 **H CLOSURE**

2 This addendum describes the planned activities and performance standards for closing Dangerous Waste
3 Management Units (DWMUs) at CWC Operating Unit Group.

4 **H.1 Closure Plan**

5 The CWC Operating Unit Group consists of the following DWMUs:

- 6 1. Flammable and Alkali Metal Waste Storage Modules
- 7 2. Waste Storage Buildings
 - 8 • 2401-W Building
 - 9 • 2402-W Series Buildings
 - 10 • 2403-W Series Buildings
- 11 3. CWC Outside Storage Area A
- 12 4. CWC Outside Storage Area B
- 13 5. CWC Outside Storage Area C
- 14 6. CWC Outside Storage Area D
- 15 7. CWC Outside Storage Area E
- 16 8. CWC Outside Storage Area F

17 Closure of the CWC DWMUs may proceed independently of one another. The closure approach will be
18 closure by removal or decontamination (“clean close”) as required by [WAC 173-303-630](#)(10) and [WAC](#)
19 [173-303-610](#)(2) for container storage units. Consistent with the criteria that must be met to clean close a
20 TSD unit, no waste will be closed in place and therefore no post-closure activities will be necessary.

21 Records of the DWMUs in the CWC complex identify the materials stored, as well as records of any
22 spills, releases, and related cleanups at CWC DWMUs. The permit conditions authorizing storage of
23 containerized waste at CWC DWMUs help ensure that spills or releases will not occur. Should spills or
24 releases occur, permit conditions ensure that they are cleaned up and documented in compliance with the
25 final closure performance standards.

26 DWMUs at CWC will be closed by removal or decontamination with respect to dangerous waste
27 contamination that resulted from operations. If it is determined that closure by removal or
28 decontamination is not possible, the closure plan will be modified in accordance with Permit Condition
29 II.J.2 to address closure of the affected unit (or units) as a landfill and post-closure activities including
30 groundwater monitoring.

31 Uncontaminated or decontaminated structures and equipment will be left in place for future use, or
32 disassembled, dismantled, and removed for disposal. Decisions regarding disposal or future use of
33 equipment and structures will be made at the time of closure. Equipment and structures subject to
34 requirements of this closure plan include those that have been used for the treatment and/or storage of
35 dangerous or mixed waste, or which may reasonably be expected to be or have been contaminated by
36 dangerous or mixed waste.

37 **H.2 Closure Performance Standard**

38 Closure by removal or decontamination requires the decontamination or removal and disposal of all
39 dangerous waste, waste residues, contaminated equipment, soil or other material established in
40 accordance with the removal or decontamination performance standards established in this closure plan
41 pursuant to [WAC 173-303-610](#)(2). This and future closure plan revisions will document closure
42 activities necessary to achieve compliance with these performance standards.

43 Closure by removal or decontamination, based on the requirements established in this closure plan
44 pursuant to [WAC 173-303-610](#)(2) will eliminate the need for future maintenance and will be protective of
45 human health and the environment by removing and reducing the chemical contamination (resulting from

1 operations) at CWC DWMUs to levels that are below concern with respect to human health and the
2 environment.

3 Clean closure of soils underlying the structures and soils surrounding the outdoor storage area (s) will be
4 accomplished by demonstrating that there are no pathways for dangerous waste to the underlying soils.
5 Operating records will be checked to verify that cleanup of any spills within the CWC dangerous waste
6 management units was performed, and that these cleanups satisfied the closure performance standards at
7 the time of the cleanup.

8 Clean closure will be to standards specified in this closure plan pursuant to [WAC 173-303-610\(2\)\(b\)\(ii\)](#)
9 for all structures, equipment, bases, liners, etc. The performance standard for structures, equipment,
10 bases, liners, etc, will be a clean debris surface in 40 CFR 268.45, Table 1, Footnote 3, incorporated by
11 reference in [WAC 173-303-140\(2\)](#). For equipment, a closure performance standard of removal or
12 disposal can be applied. For the asphalt surface located at CWC Outside Storage Area E, the closure
13 performance standard will be removal of the asphalt surface, treatment as necessary, and disposal.

14 Although not anticipated, any contaminated soils will be subject to numeric cleanup levels in [WAC 173-](#)
15 [303-610\(2\)\(b\)\(i\)](#). If contaminated soils are encountered, or if it is not possible to demonstrate there are no
16 pathways for dangerous wastes or constituents to underlying soils, this circumstance will be considered an
17 unexpected event for closure requiring a modification to the plan pursuant to Permit Condition II.J.2.

18 Any previously designated dangerous/mixed waste or debris removed from the CWC Operational Unit
19 Group authorized dangerous waste management units will be managed in accordance with this Permit.
20 Any dangerous/mixed waste from decontamination or removal efforts will be designated in accordance
21 with [WAC 173-303-070](#) through -100 and managed accordingly.

22 **H.2.1 Closure Standards for Metal Surfaces and Concrete Containment Structures**

23 This closure plan proposes ‘clean debris surface’ as the clean closure performance standard for
24 equipment, metal surfaces and concrete containment structures that will remain after closure. This
25 approach is consistent with Ecology guidance for achievement of clean closure (Publication #94-111,
26 Ecology 2005). Adherence to this guidance ensures that all residues have been removed as required by
27 [WAC 173-303-610](#).

28 The clean debris surface standard is verified visually. *“Clean debris surface” means the surface, when*
29 *viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except*
30 *that residual staining from soil and waste consisting of light shadows, slight streaks, or minor*
31 *discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining*
32 *and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch*
33 *of surface area.* [[40 CFR 268.45](#) incorporated by reference by [WAC 173-303-140\(2\)](#)]

34 Metal surfaces, except piping, requiring decontamination based on visual examination will be
35 decontaminated using an appropriate physical or chemical extraction technology from the alternative
36 treatment standards for hazardous debris [[40 CFR 268.45](#), incorporated by reference by [WAC 173-303-](#)
37 [140](#)]. Piping will be rinsed to achieve a clean debris surface.

38 When a physical extraction method is used on concrete, the performance standard is based on removal of
39 the contaminated layer of debris. The physical extraction performance standard for concrete is removal of
40 0.6 centimeter of the surface layer and treatment to a “clean debris surface”.

41 **H.2.2 Closure Standards for Underlying Soils of Buildings**

42 Clean closure of the soil under the Waste Storage Buildings (2401-W Building, 2402-W Series Buildings,
43 and 2403-W Series Buildings) will be accomplished by demonstrating that the coated concrete floors kept
44 contamination from reaching the soil. The coated concrete floors provided secondary containment for the
45 storage areas within the CWC Operating Unit Group buildings.

46 Unless inspections identify potential through-thickness cracks indicating containment failure and a
47 subsequent potential for soil contamination from the CWC operations, the soil will be considered clean

1 closed. Should inspections identify such cracks, and there have been documented spills in the vicinity,
2 potential soil contamination will be investigated. In this circumstance, a sampling and analysis plan for
3 characterizing the nature and extent of soil contamination will be prepared following the completion of a
4 data quality objectives process in accordance with EPA/600/R-96/055 (QA/G-4), *Data Quality Objectives*
5 *Process*, as amended. Any contaminated soils will be subject to numeric cleanup levels in [WAC 173-](#)
6 [303-610\(2\)\(b\)\(i\)](#). The data quality objectives will be initiated prior to closure on a schedule to ensure
7 timely closure of CWC dangerous waste management units. The sampling and analysis plan will be
8 submitted to Ecology as part of a permit modification pursuant to Permit Condition II.J.2. This permit
9 modification request will also establish constituents of concern, soil remediation requirements soil closure
10 performance standards and associated sampling, analysis, and QA/QC requirements necessary to
11 demonstrate compliance with closure performance standards. The sampling and analysis plan will be
12 prepared consistent with EPA/240-B-01/003 (EPA/QA R-5), *EPA Requirements for Quality Assurance*
13 *Project Plans*, as amended.

14 **H.2.2.1 Outdoor Storage Areas E and F**

15 Because the asphalt surface at the Outdoor Storage Areas E and F consist of a porous material (asphalt),
16 sampling and analysis of underlying soils will be necessary if there have been any spills or releases to the
17 asphalt surface. If, at the time that notice of last receipt of waste is provided to Ecology pursuant to
18 Permit Condition II.J.3, any spills or releases to the asphalt have occurred, the Permittees will prepare a
19 sampling and analysis plan for characterizing the nature and extent of soil contamination following the
20 completion of a data quality objectives process in accordance with EPA/600/R-96/055 (QA/G-4), *Data*
21 *Quality Objectives Process*, as amended. The data quality objectives process will be initiated prior to
22 closure on a schedule to ensure timely closure of CWC dangerous waste management units. The
23 sampling and analysis plan will be submitted to Ecology as part of a permit modification pursuant to
24 Permit Condition II.J.2. This permit modification request will also establish constituents of concern, soil
25 remediation requirements, soil closure performance standards, and associated sampling, analysis, and
26 QA/QC requirements necessary to demonstrate compliance with closure performance standards. The
27 sampling and analysis plan will be prepared consistent with EPA/240-B-01/003 (EPA/QA R-5), *EPA*
28 *Requirements for Quality Assurance Project Plans*, as amended.

29 If, at the time that notice of last receipt of waste is provided to Ecology pursuant to Permit Condition
30 II.J.3, no spills or releases to the asphalt have occurred, then the underlying soils will be considered clean
31 closed following removal of the asphalt surface.

32 **H.3 Closure Activities**

33 The CWC operating record will be reviewed to identify any previous spills and releases that occurred at
34 the CWC Operating Unit Group. The review will also verify the cleanup of spills was performed and that
35 these cleanups satisfied the closure performance standards at the time of the cleanup.

36 Attainment of a clean debris surface will be verified visually in accordance with the performance standard
37 and this closure plan. When the performance standard is not met, decontamination of concrete will be
38 accomplished using physical extraction methods from the alternative treatment standards for hazardous
39 debris [[40 CFR 268.45](#), Table 1, incorporated by reference by [WAC 173-303-140](#)]. Inspections to verify
40 achievement of a clean debris surface will be performed and documented.

41 The concrete will be reexamined visually after decontamination. Areas that do not satisfy the clean debris
42 closure performance standard will be reevaluated for more rigorous decontamination or removal,
43 designation, and disposal. If this circumstance is encountered, it will be considered an unexpected event
44 during closure, and this closure plan will be modified according to Permit Condition II.J.2.

45 Closure activities will include the following:

- 46 • Document review to determine spill history.
- 47 • Inventory removal.
- 48 • Visual inspection and survey.

- 1 • Process equipment decontamination and/or removal.
- 2 • Structure decontamination and/or removal.
- 3 • Designation of wastes generated during closure.
- 4 • Obtain independent registered professional engineer certification that closure activities were
- 5 completed in accordance with the approved closure plan (to include any approved permit
- 6 modifications).

7 Additional details for closure activities are provided below.

8 All waste inventories at the CWC Operating Unit Group at the start of closure will be processed as part of
9 closure. No waste will remain at the CWC Operating Unit Group at the completion of closure. Residue
10 remaining in process lines and equipment will be removed during decontamination as necessary to
11 achieve a clean debris surface. All containers of waste will be removed from the storage structures and
12 will be transferred to another permitted onsite Operating Unit Group or permitted offsite facility.
13 Equipment used in performing closure activities may be decontaminated as necessary to meet the closure
14 performance standards for equipment in Section H.2. Equipment that is not or cannot be decontaminated,
15 as well as materials used in performing closure activities, will be or disposed at an on-site Operating Unit
16 Group, an off-site permitted facility, or another approved facility.

17 **H.3.1 Visual Inspection and Survey and Clean Debris Surface Performance Standards**

18 After all waste has been removed from CWC dangerous waste management units, a visual inspection and
19 survey will be performed to identify areas of potential contamination. The visual inspection will evaluate
20 the equipment and structures, including interior walls, containment areas, grates, floors, and storage pads.
21 For areas that do not satisfy the clean debris surface closure performance standards, field personnel will
22 determine whether to remove and dispose or to decontaminate.

23 **H.3.2 Process Equipment Decontamination and/or Removal**

24 Equipment containing or contaminated with dangerous/mixed waste or waste residue will be managed by
25 one of the following methods:

- 26 • Decontamination.
- 27 • Disposal as dangerous waste.
- 28 • Disposal as mixed waste.

29 The method to be used will be determined based on the specific piece of equipment, the level of
30 contamination, the ease with which the equipment can be decontaminated, the waste designation
31 performed in accordance with [WAC 173-303-070](#) through -100, and the estimated quantity of waste to be
32 generated during decontamination. Final disposal will be determined using appropriate techniques
33 available at the time of closure.

34 **H.3.3 Structure Decontamination and/or Removal**

35 Any structures, including interior walls, containment areas, including, sumps, grates and, floors will be
36 decontaminated if they contain or have contaminated dangerous/mixed waste or waste residue in excess
37 of the clean debris surface performance standard. The method of decontamination used will depend on
38 the nature of the structure and the extent and type of contamination. Decontamination methods might
39 include wiping, washing, brushing, or scrubbing, and rinsing with water or other appropriate media.
40 Decontamination procedures will address minimization of decontamination waste, measures to contain
41 and collect such waste. Decontamination waste will be designated in accordance with [WAC 173-303-070](#)
42 through -100 and managed appropriately.

43 **H.3.4 Designation of Waste Generated During Closure**

44 During closure, waste could be generated. Any waste generated during closure will be designated in
45 accordance with [WAC 173-303-070](#) through -100. Following designation as dangerous and/or mixed
46 waste, the waste will be managed under the generator provisions of [WAC 173-303-200](#), an on-site

1 dangerous waste management unit at which closure has not yet begun, or at an off-site permitted facility.

2 In the unlikely event that contaminants are suspected to have penetrated the unit's containment, sampling
3 will be performed as necessary to determine the extent of contamination. If sampling is necessary to
4 achieve clean closure, the closure plan will be amended in accordance with the permit modification
5 process of II.J.2.

6 **H.3.5 Maximum Waste Inventory**

7 The CWC Operating Unit Group provides storage capacity for both onsite- and offsite-generated waste
8 before final disposal. An estimated maximum waste inventory is 156,412,400 liters. The volume within
9 each container consists of waste and all necessary packing material.

10 **H.4 Schedule for Closure**

11 The actual year of closure is unknown but will be based on the availability of waste requiring processing,
12 operational requirements, and the ability to maintain CWC dangerous waste management units, among
13 other considerations. Closure will be completed 180 days after the last shipment of waste is received at
14 the corresponding DWMU. [[WAC 173-303-610\(4\)\(b\)](#)]. Ecology will be notified by the Permittees on
15 when closure is expected to begin in accordance with Permit Condition II.J.1. Notification of closure will
16 be provided in accordance with Table H.1.

17 The closure schedule will be based on the time required to perform applicable closure activities described
18 in Section H.1. Closure activities are summarized in Table H.1. A detailed schedule of closure activities
19 is provided in Table H.2. Modifications to the Closure Plan schedule will be done in accordance with
20 WAC 173-303-830 Appendix I, D.1.b.

21 **H.5 Certification of Closure**

22 Within sixty (60) days of completion of closure activities at each CWC dangerous waste management unit
23 according to this plan, the Permittees will submit to Ecology by registered mail a certification that the
24 corresponding dangerous waste management units have been closed in accordance with the specifications
25 in this plan. The certification will be signed by the Permittees and by an independent registered
26 professional engineer.

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Table H.1 Summary of CWC DWMU Closure Activities

Closure Activity Description	Expected Duration¹
Receipt of final volume of dangerous waste	N/A
Notify Ecology that closure will begin	45 ² days
Remove waste inventory – package all dangerous waste, manifest, and transfer to permitted facility for further storage, treatment and/or disposal	90 days
Decontaminate structural surfaces and equipment.	45 days
Analyze decontamination waste to determine proper methods of treatment/disposal	25 days
Dispose of decontamination waste based on results of waste analysis	20 days

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Table H.2 Detailed Schedule of Closure

Action	Schedule
Pre-Closure Activities	
Date of receipt of last volume of waste	Day 0
Closure Activities	
Removal of Waste Inventory	Day 90
Removal of equipment and components	Day 95
Decontamination of Unit	Day 135
Management of Decontamination Waste	
Waste Analysis	Day 160
Waste Disposal	Day 180
Other Activities	
Certification of Closure to Ecology	Day 240

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¹ Time durations are consecutive and added together ² Notification in accordance with Permit Condition II.J.

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