

**FORM EQP 5111 ATTACHMENT A12  
 CLOSURE AND POSTCLOSURE CARE COST ESTIMATES**

This document is an attachment to Gage Products Company's (Gage) 2024 RCRA permit renewal application Form EQP 5111. The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9702 and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart H, establishes requirements for providing financial assurance for closure and, if necessary, postclosure care. Specifically, R 299.9702(1) requires the preparation of associated cost estimates. This license application attachment addresses the requirement for preparing a closure cost estimate and, if necessary, a postclosure care cost estimate. The cost estimates provided in this attachment are based on the closure and postclosure care activities detailed in Attachment A11. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

Sections listed in the table of contents below that are not applicable to the Gage Limited Storage Facility (Gage LSF) permit renewal are denoted with a strikethrough and the corresponding section has been deleted from the text. This attachment is organized as follows:

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	<del>Table A12.A.8</del>	<del>Miscellaneous Units Closure Cost Estimate</del> NA
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A12.B	POSTCLOSURE COST ESTIMATE	NA
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**A12.A CLOSURE COST ESTIMATE**  
 [R 299.9702(1) and 40 CFR §264.142]

The closure cost estimate covers the corresponding closure activities in the approved closure plan. These activities may include, but are not limited to, removal of waste inventory, decontamination, sampling and analysis, and closure certification. Unless otherwise specified in Section A11.A.3 of Attachment A11, the date of closure of the hazardous waste management units has not been determined. As such, it is not possible to predict, with any high degree of certainty, actual facility conditions or regulatory requirements at time of closure. Therefore, this closure cost estimate is based on closure of the unit within the next six months and includes a contingency estimate to account for media sampling and analysis, and removal based on current conditions.

Table A12-A.1 outlines the determination of the total cost of closure. This cost estimate will be updated annually to reflect the cost of site closure as adjusted for inflation in accordance with 40 CFR 264.142(b). Specifically, the closure cost estimate will be adjusted to account for inflation by using an inflation factor derived from the most recent Implicit Price Deflator for Gross Domestic Product published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

The assumptions made in the cost estimate are as follows:

1. Removal of final waste inventory. The final waste-solvent inventory (25,000 gallons - in bulk storage tanks and containers) will be taken off-site for disposal by a contracted third party at a cost to Gage. The estimated volume of solids from the container storage pad is one (1) drum. The estimated volume of solids from the bulk storage area pad is four (4) drums. The estimated volume of sludge wastes remaining in the bulk storage tanks for disposal is fifteen (15) drums (maximum of 50-gallons in each drum). The cost of removal and disposal for these drums is \$157.75/drum. Dismantling and disposal of the bulk storage tanks, the container storage building, and the loading/unloading area are not being planned for as these facilities and structures will remain once decontaminated for continued productive utilization as appropriate by Gage LSF, or other party interested in the facility.

2. Decontamination of container storage building, bulk storage tanks and loading/unloading area containment pads. Decontamination costs have been determined to be \$0.82/sq.ft. The container storage building and loading/unloading areas have a storage area which measures 62.8' x 66' or 4,144.8 sq. ft. ( $4,145 \times .82 = \$3,398.90$  - cost of pad cleaning). The bulk tank storage area measures 49' x 36' or 1,764 sq. ft. ( $1,764 \times .82 = \$1,446.48$  - cost of dike pad cleaning). Costs for disposing of bulk quantities of wash water generated from the cleaning procedures are estimated to be \$0.80/gal.

3. Analytical Costs. The waste characterization estimate is included to cover costs which would be incurred in the event that drums of unknown content are found upon closure. If this should happen, samples will be taken from the drums and analyzed for hazardous constituents and characteristics by approved EPA methods so that appropriate disposal of the drums can be determined. Although it is unlikely that there will be drums of unknown content, 5 analyses (one for each bulk tank) at \$400 per analysis have been added to the estimated closure costs. All analysis will be conducted for characteristics of wastes stored on site based upon Gage LSF's knowledge as obtained from their waste acceptance criteria. Gage LSF routinely conducts pre-shipment screening of all materials in their laboratory prior to acceptance to eliminate unacceptable/unknown materials.

The estimated cost of wash water analysis is based upon analysis of four samples, two from the container storage building and loading/unloading area and two from the bulk tank storage area, at a cost of \$150 per sample using the site-specific parameters and detection limits listed in Attachment A11, Appendix A11-1.

4. Supervision. All closure activities will be supervised by the Project Foreman of the contracted third party work crew at a labor rate of \$95/hour. Gage LSF's Project Coordinator will also oversee all activities conducted by the contractor as an additional work-quality control mechanism.

5. Closure Certification. The cost of certification of site clean closure by an independent third-party professional engineer is estimated on the basis of a labor rate of \$134/hour. A clean closure certification will be submitted to the Director by registered mail within 60 days of completing final closure.

6. Total Cost. Total closure costs were calculated by adding 20% for contingencies.

The estimate assumes closure procedures are completed by a third party at the time facility closure would be most expensive (e.g., with a maximum inventory). The cost estimate for disposal assumes wastes will be treated and contaminated equipment disposed rather than recovered or salvaged. The total closure cost for the closure of the Gage Limited Storage Facility is estimated at \$64,725. Adjusted for 2023, the cost is \$93,346. The closure cost estimate breakdown by unit is provided in Section A12.A.1. Unit specific- work sheets are provided, as applicable, in Tables A12.A.1 through A12.A.3.

Additional cost estimate assumptions are listed below.

1. All hazardous waste will be transported off site to a licensed facility in accordance with all applicable state and federal regulations.

2. Costs are based on current year's costs. All labor rates reflect commercial rates and include fringe benefits, payroll burden, and taxes.
3. Total costs include a 20 percent contingency for administrative cost. Miscellaneous operating costs have been specified in Table A12.A.4.

This closure cost estimate will be maintained at the facility. It will be revised whenever a change in the closure plan affects the cost of closure. It will be adjusted annually as required by pertinent regulations or when the types and quantity of wastes received at the facility change.

**A12.A.1 Closure Cost Estimate Breakdown**

**Table A12.A.1 Facility Closure Cost Estimate Breakdown by Unit\***

1.	Container Storage Areas	\$ 13,180
2.	Tank Systems	\$ 24,787
3.	Miscellaneous Cost (covering both units)	\$ 15,970
<b>Subtotal Facility Closure Estimate</b> (add lines 1 through 3)		\$ 53,937
4.	20% Contingency	\$ 10,787
5.	<b>Facility Closure Cost Estimate</b>	<b>\$ 64,725</b>

Estimates adjusted for annual inflation: Revised March 2024

	2015	2016	2017	2018	2019	2020	2021	2022	2023
GDP IPD	1.01	1.02	1.02	1.02	1.02	1.01	1.06	1.06	1.03
53,937	\$61,481	\$62,711	\$63,965	\$65,244	\$66,549	\$67,215	\$71,248	\$75,522	\$77,788
\$64,725	\$73,777	\$75,253	\$76,758	\$78,293	\$79,859	\$80,658	\$85,497	\$90,627	<b>\$93,346</b>

**Table A12.A.2 Container Storage Areas Closure Cost Estimate**

Container Storage and loading/unloading areas. Inventory removal and disposal will be completed by the contracted services of a third-party work crew at a cost to Gage LSF.

Items	Amount/Unit Price	Transportation	Total Price
Disposal of Corrosives	12 drums @ \$142/drum	12 drums @ \$20/drum	\$ 1,944
Disposal of Drummed Liquids	38 drums @ \$125/drum	38 drums @ \$20/drum	\$5,510
Cleaning of Pads	4,145 sq. ft. @ \$0.82/sq. ft.		\$3,398
Bulk Disposal of Wash Waters	2,000 gals. @ \$0.80/gallon	\$250	\$1,850
Analysis of Wash Waters	2 samples @ \$150.00/sample		\$300
Disposal of Drummed Solids	1 drum @ \$157.75/drum	1 drum @ \$20/drum	\$178
	<b>Subtotal</b>		<b>\$13,180</b>

**Table A12.A.3 Tank Systems Closure Cost Estimate**

Tank system inventory removal and disposal will be completed by the contracted services of a third-party work crew at a cost to Gage LSF.

Items	Amount/Unit Price	Transportation	Total Price
Disposal of all Bulked Liquids	22,250 gal. @ \$0.45/gallon	Included	\$ 10,013
Labor for Cleaning Inside of Bulk Storage Tanks (Level A Personal Protective Equipment and Confined Space Entry)	40 hours @ \$195/hr.		\$7,800
Cleaning of Pads	1,764 sq. ft. @ \$0.82/sq. ft.		\$1,446
Bulk Disposal of Wash Waters	2,000 gals. @ \$0.80/gallon	\$250	\$1,850
Analysis of Wash Waters	2 samples @ \$150.00/sample		\$300
Disposal of Drummed Solids	4 drums @ \$157.75/drum	4 drums @ \$20/drum	\$711
Disposal of Drummed Sludges	15 drums @ \$157.75/drum	15 drums @ \$20/drum	\$2,667
	<b>Subtotal</b>		<b>\$24,787</b>

**Table A12.A.4 Miscellaneous Costs**

The following table contains miscellaneous costs that will be shared or split between the container storage area and tank system closure.

Items	Amount/Unit Price	Total Price
Waste Characterization Costs	5 samples @ \$400/sample	\$2,000
Supervision and Gage LSF Certification	50 hours @ \$95/hour	\$4,750
Closure Report Preparation	20 hours @ \$134/hour	\$2,680
Independent PE Certification	10 hours @ \$134/hour	\$1,340
Project Management/Coordination	24 hours @ \$134/hour	\$3,200
Expenses	\$2,000 unit cost	\$2,000
	<b>Subtotal</b>	<b>\$15,970</b>

**A12.B POSTCLOSURE COST ESTIMATE**  
[R 299.9702(1) and 40 CFR §264.144]

This section is not applicable, the facility will be clean closed.