



## GUIDELINE 20 - CLOSURE AND POST-CLOSURE CARE COST ESTIMATES FOR SOLID WASTE FACILITIES

North Dakota Department of Environmental Quality - Division of Waste Management  
4201 Normandy St., Bismarck, ND 58503-1324

Telephone: 701-328-5166 ● Fax: 701-328-5200 ● Email: [solidwaste@nd.gov](mailto:solidwaste@nd.gov)

Website: <https://deq.nd.gov/wm>

Updated 06-2022

### I. Rules for Preparing Closure Cost Estimates:

- A. Cost estimates based on the detailed site-specific closure plan for the solid waste facility. Estimates must assume that closure occurs at the time when costs incurred will be the greatest.
- B. The estimate must equal the cost of hiring a third party to close the largest open area requiring final cover during the life of the facility.

Question: What is the regulatory intent of using closure/post-closure cost estimates based on a "Third Party" performing the work?

Answer: This ensures that adequate funds will be available to hire a third party to carry out the necessary activities in the event that the owner or operator declares bankruptcy, does not have all the technical expertise necessary or if the state has to hire the contractors to perform the work. A parent or subsidiary is not considered third party.

- C. Initial cost estimate based on current costs.
  - 1. Updates required for:
    - (a) Annual inflation;
    - (b) Changes in plans that increase or decrease costs;
    - (c) Increased facility/design capacity or increases in the maximum area open;
    - (d) More extensive monitoring requirements; and
    - (e) Changes in the partial closure schedule.
- D. Cost estimates must include adequate detail, descriptions, and necessary figures and computations so they can be verified.
- E. Salvage value disallowed for sale of equipment or wastes.
- F. Closure activities that should be included in the cost estimate: (**Note:** this is a generalized outline, not an all-inclusive list.)
  - 1. Mobilization/demobilization;

2. Removals/Demolitions (Scales, office/outbuildings, haul roads);
3. Grading and Earthwork;
  - a. Subsurface grading/adjustments (wastes)
  - b. Final cap systems
    - (1) Soil (ex. clay, borrow soil, topsoil)
    - (2) Liner materials
    - (3) Other materials (ex. drainage nets)
    - (4) Testing/documentation
4. Sedimentation and erosion control devices (temporary and permanent);
5. Gas controls (if applicable);
  - (a) Passive systems (collection barriers, vents, other)
  - (b) Active systems (collection, extractions, recovery, flaring systems, other)
6. Final landscaping;
  - (a) Final grading
  - (b) Seeding
  - (c) Fertilizing
  - (d) Mulching
7. Labor;
8. Project management: document and bidding preparation and coordination, construction management, quality assurance/quality control, independent engineer's certification, and related support services (i.e., report preparation);
9. Surveying and Staking (existing conditions, construction, final)
10. Survey plat; and
11. Closure certification and documentation.

**II. Rules for Preparing Post-Closure Care Cost Estimates:**

- A. Cost estimate based on detailed site-specific activities required by the post-closure care plan.
- B. Estimate is based on costs of hiring a third party to perform the work.

- C. Initial cost estimate based on current costs.
  - 1. Updates required for:
    - (a) Annual inflation;
    - (b) Changes in plans that increase costs;
    - (c) Increased facility/design capacity or additional cells/units; and
    - (d) More extensive monitoring requirements.
- D. Cost estimates must include adequate detail, descriptions, and necessary figures and computations so they can be verified.
- E. Estimate is calculated by multiplying the annual post-closure cost estimate by the number of years of post-closure care (i.e., 30 years).
- F. Post-closure activities that should be included in the cost estimate: (**Note:** this is a generalized outline, not an all-inclusive list.)
  - 1. Monitoring (ground water, surface water, explosive gas, leachate, and air quality);
  - 2. Sampling and analytical costs;
  - 3. Leachate management;
  - 4. Maintenance (preventive/corrective);
    - (a) Leachate collection removal and treatment systems - annual cleaning
    - (b) Operate gas removal systems
    - (c) Wells (all)
    - (d) Final cover (ex. mowing, reseeding, erosion control, weed control, vector control)
  - 5. Administration and labor costs;
  - 6. Surface Impoundment decommission/reclamation (if applicable);
  - 7. Gas removal systems decommissioning (if applicable);
  - 8. Monitoring well abandonment/decommissioning;
  - 9. Filing post-closure notices; and
  - 10. Post-closure certification.

### III. Rules for Updating Cost Estimates for Inflation

North Dakota Administrative Code Subdivision 33.1-20-14-02(1)(a) states that the initial cost estimates must be in current dollars, and cost estimates must be adjusted annually for inflation. The easiest way to do this is to use an inflation factor.

#### A. Update costs using an inflation factor.

Step 1: The inflation measure used is derived from federal statistics. The source is the price deflator for the Gross Domestic Product that is published in the Commerce Department's *Survey of Current Business* and can be found at the Bureau of Economic Analysis website.

Step 2: Adjust the cost estimate for inflation by multiplying the most recent cost estimate by an amount equal to one plus the inflation rate. For example, if the cost estimate is \$100,000 and the inflation rate is 3.0 percent (0.030) the adjusting procedure is:

Previous year's cost estimate	\$100,000
Inflation factor	x <u>1.03</u>
Updated cost estimate	\$103,000

New cost estimate is basis for level of financial assurance required.

**NOTE:** If a facility/unit has both closure and postclosure cost estimates, both estimates must illustrate the inflation factor separately.

### IV. Rounding Financial Assurance Costs

Mechanisms used to demonstrate financial assurance must ensure that the amount of funds assured is adequate to cover the costs of closure and postclosure care. Mechanisms must provide financial assurance for an amount **at least equal to** the current closure and/or postclosure care cost estimate(s). If multiple mechanisms are utilized, they must be **no less than the sum** of funds that would be available if a single mechanism had been established and maintained.

**Therefore**, when calculating financial assurance cost estimates, standard rounding procedures to the nearest penny should be utilized. Standard rounding procedures to the nearest penny should also be utilized when applying the annual inflation factor.

If a facility prefers an "even number" (i.e., no pennies) when preparing their mechanism(s), all rounding must be UP. The Department prefers no rounding, beyond the standard monetary within each cost estimate, occurs until the total financial assurance sum.

Please see the below scenario/examples:

**Year 1 (initial approved cost estimate):**

<b>Closure Cost Estimate</b>		<b>Postclosure Cost Estimate</b>	
Bid item 1	#####.##	Bid item 1	#####.##
Bid item...	#####.##	Bid item...	#####.##
Bid item 23	#####.##	Bid item 18	#####.##
Bid item...	#####.##	Bid item...	#####.##
Subtotals:	#####.##	Subtotals:	#####.##
Contingency%:	#####.##	Contingency%:	#####.##
Engineering/Survey%:	#####.##	Engineering/Survey%:	#####.##
<b>TOTAL:</b>	<b>\$1,234,567.21</b>	<b>TOTAL:</b>	<b>\$987,654.57</b>

Closure:	\$1,234,567.21
<u>Postclosure:</u>	<u>\$987,654.17</u>
<b>TOTAL:</b>	<b>\$2,222,221.38</b>

The facility chooses to round the total for their financial assurance mechanism(s): \$2,222,222.00 is then utilized.

**Year 2 (annual submittal utilizing inflation factor):**

	Previous Year	Inflation Factor	Inflation Adjusted
Closure:	\$1,234,567.21	X 1.030	\$1,271,604.23
<u>Postclosure:</u>	<u>\$987,654.17</u>	<u>X 1.030</u>	<u>\$1,017,283.80</u>
<b>TOTAL:</b>	<b>\$2,222,221.38</b>		<b>\$2,288,888.03</b>

The facility chooses to round the total for their financial assurance mechanism(s): \$2,288,889.00 is then utilized.

**Year 3 (annual submittal utilizing inflation factor):**

	Previous Year	Inflation Factor	Inflation Adjusted
Closure:	\$1,271,604.23	X 1.029	\$1,308,480.75
<u>Postclosure:</u>	<u>\$1,017,283.80</u>	<u>X 1.029</u>	<u>\$1,046,785.03</u>
<b>TOTAL:</b>	<b>\$2,288,888.03</b>		<b>\$2,355,265.78</b>

The facility chooses to NOT round the total for their financial assurance mechanism(s): \$2,355,265.78 is then utilized.