COST ESTIMATE CALCULATION WORKSHEET

The following tables from Chapter 5 of the December 22, 2000 *Solid Waste Financial Assurance Program Report* may be used to calculate cost estimates for closure and post-closure.

Table 5.1 Site Data
FACILITY NAME:
PERMIT NUMBER:

DESCRIPTION	QUANTITY	UNITS
Total Permitted Area		acres
Active Portion		
Composite Lined		acres
Soil Lined		acres
Final Cover Area		
Composite Lined		acres
Soil Lined		acres
Perimeter Fencing		linear feet
Groundwater Monitoring Wells		linear feet
Methane Gas Probes		linear feet
Terraces		linear feet
Letdown Channels		
Perimeter Drainage Ditches		linear feet

5.2 Calculating Closure Costs

Table 5.2 can be used to calculate closure cost estimates for landfills for which site specific data are available. The table is designed to be executed as a computer spreadsheet, but will work equally as well using hand calculations.

The following procedures may be utilized to reach the estimated closure cost:

- Input site specific quantities from Table 5.1 into Table 5.2, making sure the requisite units are used. Some quantities are already given by the table.
- Multiply the value input for quantity by the multiplier and unit cost given by the table, and enter the resultant value in the subtotal column to compute values for Tasks/Services listed in Items 1 through 4.
- Add subtotals for Task/Service Items 1 through 4 to determine a Subtotal for Task/Services, and enter the sum as the value Item 5.
- Compute Administrative Services, Technical and Professional Services and Closure Contingency costs, Items 6, 7 and 8, by multiplying the Subtotal (Item 5) by the multiplier for each respective Item. Enter the resultant values.
- Compute the sum of Items 5,6,7,and 8 and enter the resultant as a value for Total Final Closure, Item 9. The value for Total Final Closure is the estimated Closure Cost for the facility for which data was entered.

Table 5.2 Closure Cost Estimate

FACILITY NAME:
FACILITY TYPE:
FACILITY LOCATION:

	Task/Service	Quantity	Units	Multiplier	Unit Cost	Subtotal
1	**PRELIMINARY SITE WORK**					
a	Conduct Site Evaluation		lump sum	1	$2,750.00	
b	Dispose Final Wastes					
	Average Daily Flow		tons/day			
	Disposal Cost		$/ton	5 days of waste		
c	Remove Temporary Building(s)	1	lump sum	1	$2,450.00	
d	Remove Equipment	1	lump sum	1	$2,000.00	$2,000.00
e	Repair/Replace Perimeter Fencing		linear feet	25% of fencing	$2.20	
f	Clean Leachate Line(s)	1	lump sum	1	$1,250.00	$1,250.00
2	**MONITORING EQUIPMENT**					
a	Rework/Replace Monitoring Well(s)		VLF	25% of wells	$41.40	
b	Plug Abandoned Monitoring Well(s)		VLF	25% of wells	$17.75	
c	Rework/Replace Methane Probe(s)		VLF	25% of probes	$35.75	
d	Plug Abandoned Methane Probe(s)		VLF	25% of probes	$14.00	
e	Rework/Replace Remediation and/or Gas Control Equipment	5% of equipment capital cost	lump sum	1		

3	**CONSTRUCTION**					
a	Complete Site Grading		acres	1	$1,122.00	
b	Construct Final Cap					
	Compacted On-site Clay Cap or		cubic yards	1	$3.20	
	Compacted Off-site Clay Cap or		cubic yards	1	$5.17	
	Install Geosynthetic Clay Liner Cap		square feet	1	$0.38	
c	Construct Landfill Gas Venting Layer					
	Place Sand or		acres	1	$30,000.00	
	Install Net and Geotextile		square feet	1	$0.27	
d	Install Passive Landfill Gas Vents		acres	1	$500.00	
e	Install Flexible Membrane Liner		square feet	1	$0.32	
f	Drainage Layer					
	Place Sand or		acres	1	$30,000.00	
	Install Net and Geonet		square feet	1	$0.27	
g	Place On-site Topsoil		cubic yards	1	$1.50	
	Place Off-site Topsoil		cubic yards	1	$12.00	
h	Establish Vegetative Cover		acres	1	$400.00	
4	**DRAINAGE/EROSION CONTROL**					
a	Construct Terraces		linear feet	1	$7.24	
b	Construct Letdown Channels		linear feet	1	$5.55	
c	Clean Perimeter Drainage Ditches		linear feet	50% of ditches	$4.70	
5	**SUBTOTAL**					
6	**ADMINISTRATIVE SERVICES**	1	lump sum	1	10%	
7	**TECHNICAL and PROFESSIONAL SERVICES**	1	lump sum	1	12%	
8	**CLOSURE CONTINGENCY**	1	lump sum	1	10%	
9	**TOTAL FINAL CLOSURE**					

5.3 Calculating Post-Closure Costs

Table 5.3 can be used to estimate Post-Closure Costs. Table 5.3 may be utilized in the same manner as Table 5.2.

The following procedures may be utilized to reach the estimated post-closure cost:

- Input site specific quantities from Table 5.1 into Table 5.3 making sure the requisite units are used. Some quantities are already given by the table.
- Multiply the value input for quantity by the multiplier and unit cost given by the table, and enter the resultant value in the subtotal column to compute values for Tasks/Services listed in Items 1 through 5.
- Add subtotals for Task/Service Items 1 through 5 to determine a Subtotal for Task/Services, and enter the sum as the value Item 6.
- Compute Administrative Services, Technical and Professional Services and Closure Contingency costs, Items 7,8, and 9, by multiplying the Subtotal (Item 6) by the multiplier for each respective Item. Enter the resultant values.
- Compute the sum of Items 6, 7, 8, and 9 and enter the resultant as a value for Total Post Closure, Item 10. The value for Total Post Closure is the estimated Post-Closure Cost for the facility for which data was entered.

Table 5.3 Post Closure Estimate

FACILITY NAME:
FACILITY TYPE:
FACILITY LOCATION:

	Task/Service	Quantity	Units	Multiplier*	Unit Cost	Subtotal
1	**SITE MAINTENANCE**					
a	Site Inspections	4	per year	30 yrs	$500.00	
b	General Maintenance	1	lump sum	30 years	$1,500.00	
c	Remediation and/or Gas Control Equipment	5% of equipment capital cost	lump sum	one per 5 yrs for 30 years		
2	**MONITORING EQUIPMENT**					
a	Rework/Replace Monitoring Well(s)		VLF	25% of wells	$41.40	
b	Plug Abandoned Well(s)		VLF	25% of wells	$17.75	
c	Final Plugging of Monitoring Wells		VLF	1	$17.75	
d	Rework/Replace Methane Probe(s)		VLF	25% of probes	$35.75	
e	Plug Abandoned Probe(s)		VLF	25% of probes	$14.00	
f	Final Plugging of Methane Probes		VLF	1	$14.00	
g	Final Plugging of Piezometer(s)		VLF	1	$14.00	
3	**SAMPLING and ANALYSIS**					
a	Groundwater Monitoring Wells		wells	2/yr for 30 years	$551.00	
b	Methane Gas Probes		probes	2/yr for 30 years	$35.00	

c	Surface Water Monitoring Points		points	2/yr for 30 years	$65.00	
d	Leachate		sample	2/yr for 30 years	$ 105.00	
4	**FINAL COVER MAINTENANCE**					
a	Mow and Fertilize Vegetative Cover		acres	30 years	$160.00	
b	Repair Erosion, Settlement, and Subsidence for On-site Soils		acres	2 CY/acre for 30 years	$2.00	
	Repair Erosion, Settlement, and Subsidence for Off-site Soils		acres	2 CY/acre for 30 years	$12.00	
c	Re-seed Vegetative Cover		acres	20% of area for 30 years	$400.00	
5	**LEACHATE MANAGEMENT**					
a	Clean Leachate Line(s)	1	lump sum	30 years	$1,250.00	
b	Maintain Leachate Collection System and Equipment	1	lump sum	30 years	$2,000.00	
c	Collect, Treat, Transport, and Dispose Leachate		gallons/year	30 years	$0.25	
6	**SUBTOTAL**					
7	**ADMINISTRATIVE SERVICES**		lump sum	1	6%	
8	**TECHNICAL and PROFESSIONAL SERVICES**		lump sum	1	7%	
9	**POST-CLOSURE CONTINGENCY**		lump sum	1	10%	
10	**TOTAL POST CLOSURE**					