

## APPENDIX D

### Worksheet for Determining Compost Bin or Windrow Volume Requirements

Name: \_\_\_\_\_ Location \_\_\_\_\_

**Step A—Determine the weight of animal carcasses to be composted.**

Average daily loss (ADL) \_\_\_\_\_ lbs.

Design mortality weight (W1) \_\_\_\_\_ lbs.

Annual loss = ADL x 365 = ( \_\_\_\_\_ ) x 365 = \_\_\_\_\_ lbs.

**Step B—Determine the composting cycle times for the “design weight” to be composted in each windrow or bin.**

Primary cycle time (days) =  $5.00 \times (W1)^{0.5} = 5.00 \times ( \text{_____} )^{0.5}$   
 = \_\_\_\_\_ days (If less than 10 days, use 10.)

Secondary cycle time (days) = 1/3 primary cycle time, minimum time  $\geq$  10 days  
 =  $1/3 \times ( \text{_____} )$   
 = \_\_\_\_\_ days (If less than 10 days, use 10.)

Storage time (days) = Year’s maximum period of time between land application events.  
 = \_\_\_\_\_ days (from nutrient management plan)

**Step C—Determine the needed composter volumes.**

Primary composter volume (ft<sup>3</sup>) = 0.2 x ADL x primary cycle time  
 = 0.2 x \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ ft<sup>3</sup>

Secondary composter volume (ft<sup>3</sup>) = 0.2 x ADL x secondary cycle time  
 = 0.2 x \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ ft<sup>3</sup>

Storage volume (ft<sup>3</sup>) = 0.2 x ADL x storage time (days)  
 = 0.2 x \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ ft<sup>3</sup>

**Step D—Determine the dimensions of the compost facility, bin dimensions, and windrow size or number of bins.**

**Step E—Determine the annual sawdust required for the composting.**

Annual sawdust needs (yd<sup>3</sup>/yr) = annual loss (lbs/yr) x 0.0069  
 = \_\_\_\_\_ x \_\_\_\_\_  
 = \_\_\_\_\_ yd<sup>3</sup>/yr

### Equations for universal sizing of composting bins and windrows

$$T_1 = 5 \times W_1^{0.5} - \text{days}$$

$$\geq 10 \text{ days}$$

$$V_1 \geq 0.2 \times \text{ADL} \times T_1 - \text{ft}^3$$

$$T_2 = 1/3 \times T_1 - \text{days}$$

$$\geq 10 \text{ days}$$

$$V_2 \geq 0.2 \times \text{ADL} \times T_2 - \text{ft}^3$$

$$T_3 = \text{storage} - \text{days}$$

= Year's maximum period of time between land application events in keeping with the timing requirements of the nutrient management plan

$$V_3 \geq 0.2 \times \text{ADL} \times T_3 - \text{ft}^3$$

$$\text{Annual sawdust needs} = \text{ADL} \times 0.0069 - \text{yd}^3/\text{yr}$$

Where

ADL = average daily mortality (lbs/day)

$W_1$  = design mortality weight (lbs)

$T_1$  = Primary cycle time (days)

$V_1$  = Primary compost bin or windrow volume (ft<sup>3</sup>)

$T_2$  = Secondary cycle time (days)

$V_2$  = Secondary compost bin or windrow volume (ft<sup>3</sup>)

$T_3$  = Storage period (days)

$V_3$  = Storage volume requirement (ft<sup>3</sup>)