



# OSTP Mound Design Worksheet >1% Slope



1. SYSTEM SIZING: Project ID: \_\_\_\_\_ v 05.13.14

- A. Design Flow:  GPD
- B. Soil Loading Rate:  GPD/ft<sup>2</sup>
- C. Depth to Limiting Condition:  ft
- D. Percent Land Slope:  %
- E. Design Media Loading Rate:  GPD/ft<sup>2</sup>
- F. Mound Absorption Ratio:

TABLE IXa				
LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA AND ABSORPTION RATIOS USING PERCOLATION TESTS				
Percolation Rate (MPI)	Treatment Level C		Treatment Level A, A-2, B.	
	Absorption Area Loading Rate (gpd/ft <sup>2</sup> )	Mound Absorption Ratio	Absorption Area Loading Rate (gpd/ft <sup>2</sup> )	Mound Absorption Ratio
<0.1	-	1	-	1
0.1 to 5	1.2	1	1.6	1
0.1 to 5 (fine sand and loamy fine sand)	0.6	2	1	1.6
6 to 15	0.78	1.5	1	1.6
16 to 30	0.6	2	0.78	2
31 to 45	0.5	2.4	0.78	2
46 to 60	0.45	2.6	0.6	2.6
61 to 120	-	5	0.3	5.3
>120	-	-	-	-

Table I MOUND CONTOUR LOADING RATES:			
Measured Perc Rate	← OR →	Texture - derived mound absorption ratio	Contour Loading Rate:
≤ 60mpi		1.0, 1.3, 2.0, 2.4, 2.6	→ ≤12
61-120 mpi	← OR →	5.0	→ ≤12
≥ 120 mpi*		>5.0*	→ ≤6*

\*Systems with these values are not Type I systems. Contour Loading Rate (linear loading rate) is a recommended value.

## 2. DISPERSAL MEDIA SIZING

- A. Calculate Dispersal Bed Area: Design Flow ÷ Design Media Loading Rate = ft<sup>2</sup>  
 GPD ÷  GPD/ft<sup>2</sup> =  ft<sup>2</sup>  
 If a larger dispersal media area is desired, enter size:  ft<sup>2</sup>
- B. Enter Dispersal Bed Width:  ft *Can not exceed 10 feet*
- C. Calculate Contour Loading Rate: Bed Width X Design Media Loading Rate  
 ft<sup>2</sup> X  GPD/ft<sup>2</sup> =  gal/ft *Can not exceed Table 1*
- D. Calculate Minimum Dispersal Bed Length: Dispersal Bed Area ÷ Bed Width = Bed Length  
 ft<sup>2</sup> ÷  ft =  ft

## 3. ABSORPTION AREA SIZING

- A. Calculate Absorption Width: Bed Width X Mound Absorption Ratio = Absorption Width  
 ft X  =  ft
- B. For slopes >1%, the Absorption Width is measured downhill from the upslope edge of the Bed.  
 Calculate Downslope Absorption Width: Absorption Width - Bed Width  
 ft -  ft =  ft

## 4. DISTRIBUTION MEDIA: ROCK

- A. Media Volume: Media Depth X Length X Width  
 ft X  ft X  ft =  ft<sup>3</sup> ÷ 27 =  yd<sup>3</sup>

5. DISTRIBUTION MEDIA: REGISTERED TREATMENT PRODUCTS: CHAMBERS AND EZFLOW

- A. Enter Dispersal Media:
- B. Enter the Component: Length:  ft Width:  ft Depth:  ft
- C. Number of Components per Row = Bed Length divided by Component Length (Round up)  
 ft ÷  ft =  components/row
- D. Actual Bed Length = Number of Components/row X Component Length:  
 components X  ft =  ft
- E. Number of Rows = Bed Width divided by Component Width (Round up)  
 ft ÷  ft =  rows *Adjust width so this is an whole number.*
- F. Total Number of Components = Number of Components per Row X Number of Rows  
 X  =  components

6. MOUND SIZING

- A. Calculate Minimum Clean Sand Lift: 3 feet minus Depth to Limiting Condition = Clean Sand Lift  
 3.0 ft -  ft =  ft Design Sand Lift (optional):  ft
- B. Calculate Upslope Height: Clean Sand Lift + media depth + cover (1 ft.) = Upslope Height  
 ft +  ft +  ft =  ft
- C. Select Upslope Berm Multiplier (based on land slope):

Land Slope %	0	1	2	3	4	5	6	7	8	9	10	11	12	
Upslope Berm Ratio	3:1	3.00	2.91	2.83	2.75	2.68	2.61	2.54	2.48	2.42	2.36	2.31	2.26	2.21
	4:1	4.00	3.85	3.70	3.57	3.45	3.33	3.23	3.12	3.03	2.94	2.86	2.78	2.70

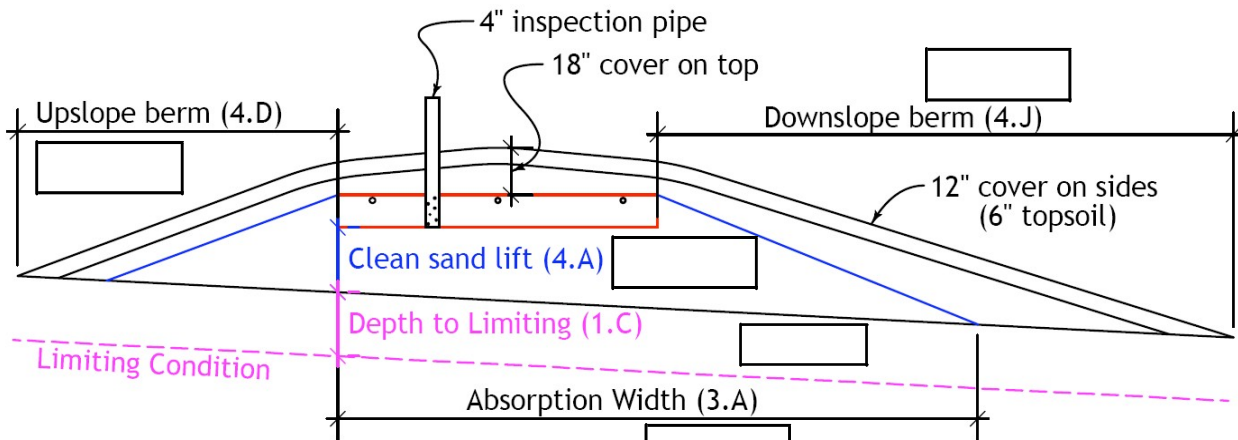
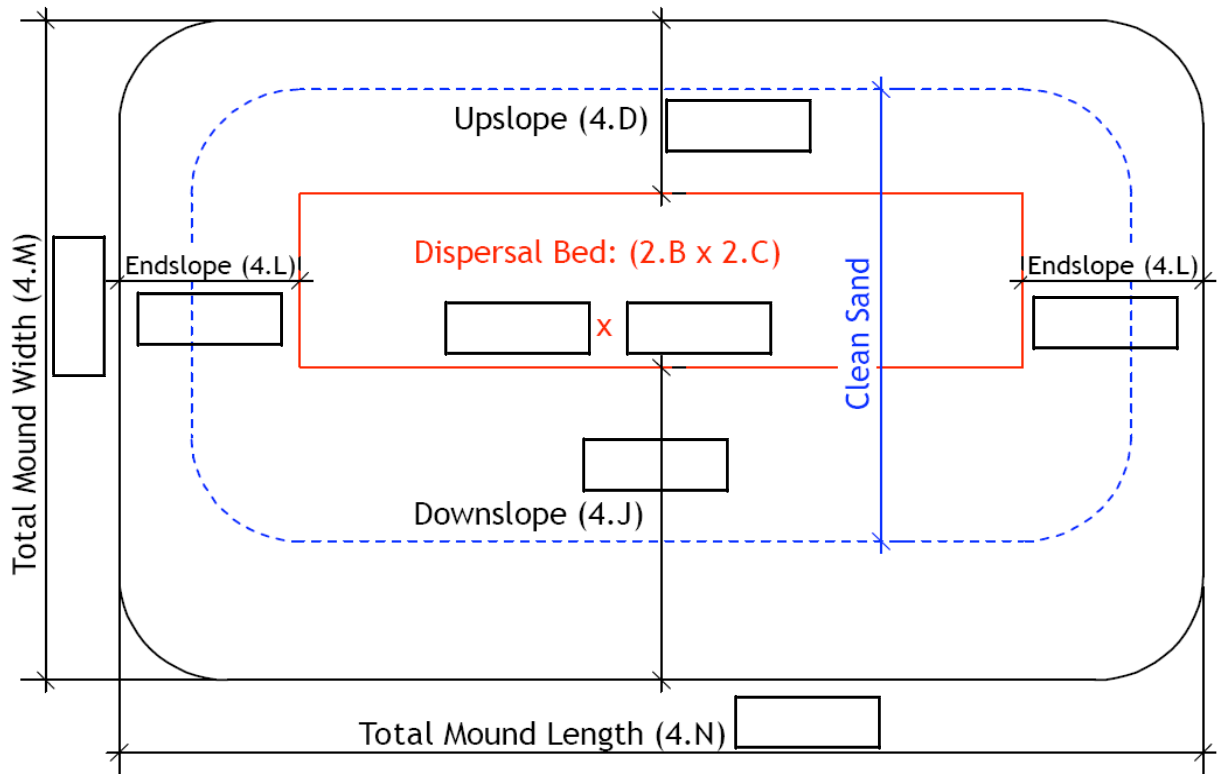
- D. Calculate Upslope Berm Width: Multiplier X Upslope Mound Height = Upslope Berm Width  
 ft X  ft =  ft
- E. Calculate Drop in Elevation Under Bed: Bed Width X Land Slope ÷ 100 = Drop (ft)  
 ft X  % ÷ 100 =  ft
- F. Calculate Downslope Mound Height: Upslope Height + Drop in Elevation = Downslope Height  
 ft +  ft =  ft
- G. Select Downslope Berm Multiplier (based on land slope):

Land Slope %	0	1	2	3	4	5	6	7	8	9	10	11	12	
Downslope Berm Ratio	3:1	3.00	3.09	3.19	3.30	3.41	3.53	3.66	3.80	3.95	4.11	4.29	4.48	4.69
	4:1	4.00	4.17	4.35	4.54	4.76	5.00	5.26	5.56	5.88	6.25	6.67	7.14	7.69

- H. Calculate Downslope Berm Width: Multiplier X Downslope Height = Downslope Berm Width  
 x  ft =  ft
- I. Calculate Minimum Berm to Cover Absorption Area: Downslope Absorption Width + 4 feet  
 ft +  ft =  ft
- J. Design Downslope Berm = greater of 4H and 4I:  ft
- K. Select Endslope Berm Multiplier:  (usually 3.0 or 4.0)

- L. Calculate Endslope Berm X Downslope Mound Height = Endslope Berm Width  
 ft X  ft =  ft
- M. Calculate Mound Width: Upslope Berm Width + Bed Width + Downslope Berm Width  
 ft +  ft +  ft =  ft
- N. Calculate Mound Length: Endslope Berm Width + Bed Length + Endslope Berm Width  
 ft +  ft +  ft =  ft

7. MOUND DIMENSIONS



Note:  
 For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.  
 For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Comments: