Sizing Worksheet - INF-1 Infiltration Basin/ INF-2 Subsurface Infiltration / INF-4 Drywell

Designer: Project Proponent: Date: Project: Location:		
Type of Vegetation: (Check type used or describe "Other")	___ Native Grasses ___ Irrigated Turf Grass ___ Other	
Pretreatment Feature:		
Outflow Collection:		
Step 1: Determine water quality design volume		
1-1. Enter Project area (acres), $A_{project}$ If this BMP captures runoff from a portion of the project area, enter the tributary area	$A_{project}$ =	acres
1-2. Enter Project impervious fraction, *Imp* (e.g. 60% = 0.60)	Imp=	
1-3. Determine pervious runoff coefficient using Table C-1, C_p	C_p =	
1-4. Calculate runoff coefficient, $C = 0.95*imp + C_p\ (1-imp)$	C =	
1-5. Enter design rainfall depth of the storm (in), P_i	P_i =	in
1-6. Calculate rainfall depth (ft), $P = P_i/12$	P =	ft
1-7. Calculate water quality design volume (ft^3), $SQDV=43560\times C*P*A_{project}$	SQDV=	ft^3
Step 2: Determine the design percolation rate		
2-1. Enter measured soil infiltration rate (in/hr, 0.3 in/hr min.), $P_{measured}$	$P_{measured}$ =	in/hr
2-2. Determine percolation rate correction factor, S_A based on suitability assessment (see Appendix C.2)	S_A =	
2-3. Determine percolation rate correction factor, S_B based on design (see Appendix C.2)	S_b =	
2-4. Calculate combined safety factor, $S = S_A \times S_b$	S =	

2-5. Calculate the design percolation rate (in/hr), $P_{design} = P_{measured}/S$	P_{design} =	in/hr
Step 3: Calculate the surface area		
3-1. Enter required drain time (hours,72 hrs max.), *t*	t =	hrs
3-2. Calculate max. depth of runoff that can be infiltrated within the *t* (ft), $d_{max} = P_{design}\ t/12$	d_{max} =	ft
3-3. For basins, select ponding depth (ft), d_p, such that $d_p \leq d_{max}$	d_p =	ft
3-4. For trenches, enter trench fill aggregate porosity, n_t	n_t =	
3-5. For trenches, enter depth of trench fill (ft), d_t	d_t =	ft
3-5. For trenches, select ponding depth d_p such that $d_p \leq d_{max} - n_t d_t$	d_p=	ft
3-6. Enter the time to fill infiltration basin or trench with water (Use 2 hours for most designs), *T*	T =	hrs
3-7. Calculate infiltrating surface area for infiltration basin (ft^2): $A_b = SQDV/((T\ P_{design}\ /12)+d_p)$ OR Calculate infiltrating surface area for subsurface infiltration facilities or aggregate- filled drywells (ft^2): $A_t = SQDV/((T\ P_{design}\ /12)+n_t d_t+dp)$	A_b = A_t =	ft^2 ft^2
Step 4: Size the forebay (infiltration basins or trenches)		
If a separate pre-treatment unit is designed for the infiltration facility, skip to Step 5. If not, continue through 4-1 through 4-4.		
4-1. Calculate the volume of the forebay (ft^3), $V_{forebay}$=0.25*SQDV	$V_{forebay}$= =	ft^3
4-2. Determine forebay depth (ft), $d_{forebay}$	$d_{forebay}$=	ft
4-3. Calculate forebay bottom surface area (ft^2), $A_{forebay}=V_{forebay}/d_{forebay}$	$A_{forebay}$=	ft^2
4-4. Provide outlet pipe such that the forebay drains to the infiltration facility within 10 minutes.		
Step 5: Provide conveyance capacity for filter clogging		
5-1.The infiltration facility should be placed off-line, but an emergency overflow must still be provided in the event the filter becomes clogged. Design emergency overflow in accordance with applicable standards of the Ventura County Flood Control District or local jurisdiction.		