

HENRICO COUNTY ENVIRONMENTAL COMPLIANCE MANUAL

WORKSHEET 14.05 - SITUATION FIVE

Compile existing data and determine existing site imperviousness (I_{EXIST}). For the purposes of these calculations, site area (A_{SITE}) is defined as the entire parcel. A_{EXIST} represents the actual amount of existing impervious cover on the site.

A_{SITE}	=		acres
A_{EXIST} structures	=		acres
parking lot	=		acres
roadway	=		acres
other	=		acres
Total A_{EXIST}	=		acres
I_{EXIST}	=	$(Total A_{EXIST} \div A_{SITE}) \times 100$	
I_{EXIST}	=		% (expressed in whole numbers)
$A_{EXIST} \times 0.10$	=		acres

Compile post-development data and determine post-development project imperviousness ($I_{PROJECT}$). For the purposes of these calculations, project area ($A_{PROJECT}$) is defined as the area of proposed impervious cover associated with this project (additional impervious cover and impervious cover that will replace existing impervious cover). A_{POST} represents the actual amount of impervious cover on the site once the proposed development is complete.

$A_{PROJECT}$:	structures	=		acres
	parking lot	=		acres
	roadway	=		acres
	other	=		acres
Total $A_{PROJECT}$		=		acres
	Total $A_{PROJECT}$	\leq	$A_{EXIST} \times 0.10$	
		\leq		

If $I_{EXIST} \leq 16\%$ and $I_{POST} \leq 16\%$, STOP. There is no pollutant removal requirement. Otherwise, refer to the **CALCULATION OF POLLUTANT REMOVAL REQUIREMENTS** section at the beginning of this chapter for development situation determination.

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Calculate the pre and post-development pollutant loadings for the site using the Simple Method.

$$L = P \times P_J \times [0.05 + (0.09 \times I)] \times C \times A \times 2.72 / 12$$

Where:

P_J	=	unitless rainfall correction factor
	=	0.9 for all of Tidewater, Virginia
P	=	annual rainfall depth in inches
	=	43 for the Richmond Metropolitan Area
C	=	flow weighted mean concentration of total phosphorus
	=	0.26 mg/l for the entire County
$I_{\text{WATERSHED}}$	=	average land cover condition of the Bay watershed
	=	16 percent

Calculate the load produced by this project (L_{PROJECT}):

$$L_{\text{PROJECT}} = [0.05 + (0.009 \times I_{\text{PROJECT}})] \times 2.28 \times A_{\text{PROJECT}}$$

$$= [0.05 + (0.009 \times \underline{100})] \times 2.28 \times A_{\text{PROJECT}}$$

$$L_{\text{PROJECT}} = 2.166 \times A_{\text{PROJECT}}$$

$$= 2.166 \times \underline{\hspace{2cm}}$$

$$L_{\text{PROJECT}} = \underline{\hspace{2cm}} \text{ pounds per year}$$

Calculate the pollutant removal requirement (RR):

$$RR = L_{\text{PROJECT}}$$

$$RR = \underline{\hspace{2cm}} \text{ pounds per year}$$