

**Town of Indian River Shores
Swale Sizing Template**

Existing Conditions - Pre Development

$$A_{Total} = \frac{5,400}{1} \text{ ft}^2, \text{ or } \frac{0.1240}{1} \text{ acres}$$

$$A_{Pervious} = \frac{5,400}{1} \text{ ft}^2, \text{ or } \frac{0.1240}{1} \text{ acres}$$

$$A_{Imperv} = \frac{0}{1} \text{ ft}^2, \text{ or } \frac{0.0000}{1} \text{ acres}$$

Area Check 5,400 Total Area (ft³)
(Area Pervious + Area Impervious = Area Total)

Post Development Improvements

$$A_{Total} = \frac{5,400}{1} \text{ ft}^2, \text{ or } \frac{0.1240}{1} \text{ acres}$$

$$A_{Pervious} = \frac{3,300}{1} \text{ ft}^2, \text{ or } \frac{0.0758}{1} \text{ acres}$$

$$A_{ImperviousAdded} = \frac{2,100}{1} \text{ ft}^2, \text{ or } \frac{0.0482}{1} \text{ acres}$$

Area Check 5,400 Total Area (ft³)
(Area Pervious + Area Impervious = Area Total)

Rational Method Runoff Coefficient Calculation:

C pervious = 0.3
C impervious = 0.95

Pre Development Condition (C):

$$C_{pre} = ((C_{perv} \text{ pre} \times A_{perv} \text{ pre}) + (C_{imperv} \text{ pre} \times A_{imperv} \text{ pre})) / A_{total} = \underline{\underline{0.30}}$$

Post Development Condition (C):

$$C_{post} = ((C_{perv} \text{ post} \times A_{perv} \text{ post}) + (C_{imperv} \text{ post} \times A_{imperv} \text{ post})) / A_{total} = \underline{\underline{0.553}}$$

Pre Development Condition:

$$Q = CiA$$

C = 0.30
i 10 yr = 7.4 in/hr ; tc = 10 minutes
A = 0.1240 acres

$$Q = 0.3 \text{ cfs}$$

$$V = CRA$$

R = 10 year/ 24 hour rainfall
R = 8 inches (TR-55)

$$V = 1,080 \text{ ft}^3$$

Post Development Condition:

$$Q = CiA$$

C = 0.55
i 10 yr = 7.4 in/hr ; tc = 10 minutes
A = 0.1240 acres

$$Q = 0.5 \text{ cfs}$$

$$V = CRA$$

R = 10 year/ 24 hour rainfall
R = 8 inches

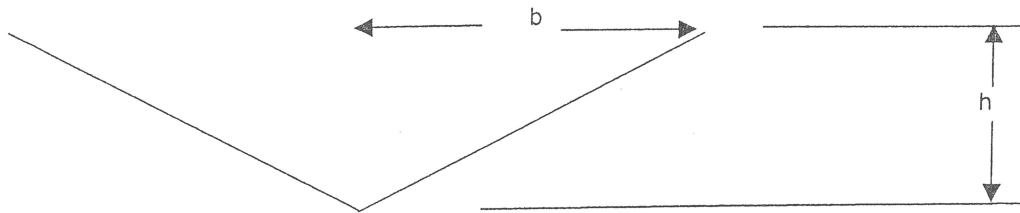
$$V = 1,990 \text{ ft}^3$$

Pre/Post Condition:

Storage Volume Required:
 $V_{\text{post}} - V_{\text{pre}} = 910 \text{ ft}^3$

Total Volume Generated 10year/24 hour event:
 $V_{\text{post}} = 1,990 \text{ ft}^3$

Swale Volume Calculation (assumed trinangular shape) 3:1 Ratio Minimum



Area of the Swale = 2 triangles = $2(0.5*b*h) = b*h$

$b = 4.50 \text{ ft}$
 $h = 2.25 \text{ ft}$

Area of the Swale = 10.125 ft^2

Volume of the Swale = Area of the swale X Length of the swale

Length of the swale = L 90 ft

Volume of the swale =	911.25 ft^3	Volume Provided in Swale
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Volume of swale required to meet pre/post requirement for the 10year/24 hour storm = 910.00 ft^3

Minimum Allowable

Volume of swale required to hold runoff for the 10year/24 hour storm = 1990.00 ft^3

Recommended Volume if Possible