ALL SHEDS- VEGETATED SWALE

Calculation Table for Determination of Design Imperviousness (I_{WQ})

Site Element	Unit Area (ac)	Percent Imperviousness	Weighting Factor[(b)]	Weighted % Imperviousness[(c,d)]
Roof/Asphalt/concrete	43	100	0.568	57
Lawn/turf	23	0	0.302	0
Mixed use	10	80	0.130	10
Total Contributing Area[(a)]	75	–	–	67

a. Total contributing area = sum of unit areas

b. Weighting factor = unit area / total tributary area

c. Weighted imperviousness = weighting factor x percent imperviousness

d. Design imperviousness = sum of weighted imperviousness

Swale Calculations

Shed Area	75.26	ac
Intensity	0.2	in/hr
C	0.47	
n	0.2	
Qdesign=	7.05	cfs

swale bottom width	0	ft
side slope	3	:1
design slope	0.0005	ft/ft
Design flow velocity	0.52	ft/sec
Flow Depth	2.64	ft
Required Design Length	312	ft
Provided Design Length	1510	ft
Check Swale Length	Ok	

Notes:

C = runoff coefficient=$0.858\ (I_{WQ})^3 - 0.78\ (I_{WQ})^2 + 0.774\ (I_{WQ}) + 0.04$

Q_{design} = C x I x A

Intensity determined as 2X the 85th percentile hourly

Rainfall intensity (City of Woodland rain gauge = 0.10 in/hr)

Design length calculated using the 10 min. minimum contact

Design Length = Contact Time (min) x Design Flow Velocity x 60 (sec/min)