

5.10 DISCONNECTION OF ROOFTOP RUNOFF

DEFINITION OF DISCONNECTION OF ROOFTOP RUNOFF CREDIT

A credit is given when rooftop runoff is disconnected and then directed to a pervious area where it can either infiltrate into the soil or filter over it. The credit is typically obtained by in areas with slopes less than 5% to promote overland filtering on single family residential lots.

If a rooftop is adequately disconnected, the disconnected impervious area can be deducted from total impervious cover (therefore potentially gaining compliance with the Low Impact Development impervious cover levels or reducing BMP volume). This credit is restricted to single family lots.

Table 5-1: Rooftop Disconnection Impervious Cover Credit

Disconnection Length Provided	0 to 14 ft.	15 to 29 ft.	30 to 44 ft.	45 to 59 ft.	61 to 74 ft.	> 75 ft.
% Impervious Cover Credit per By Disconnect (No Storage Volume)	10%	20%	40%	60%	80%	100%
Dry Well, Rainwater Collection, Rain Garden Storage Volume Required to achieve 100% Impervious Cover Credit in Combination with flow length	104 cu-ft.	83 cu-ft.	62 cu-ft.	42 cu-ft.	21 cu-ft.	0 cu-ft.

Source: LCRA Highland Lakes Water Quality Technical Manual.

$$Ar = ART * \%ICD$$

Where: Ar = Allowable reduction in impervious cover

ART = Area of roof-top

%ICD = Impervious cover credit factor per the above Table

RESTRICTIONS ON THE CREDIT

The rooftop disconnection is restricted to single-family lots and subject to the following restrictions:

- The contributing area of rooftop to a disconnected discharge shall be 800 square feet or less;
- The length of “disconnection” shall be 75 feet or greater, or compensated using the above table;
- Disconnections will only be credited for lot sizes greater than 5,000 sq. ft.;
- The length of “disconnection” shall be on an average slope of less than 5%;
- The entire vegetative “disconnection” shall have a minimum soil depth of 4 to 6 inches. Builders and owners will import soil if needed to achieve sufficient soil depth. Soil shall satisfy the import soil specifications found in the following Soil Amendment Credit
- The disconnection must drain continuously through a vegetated swale or across the vegetated landscape to the roadside curb, conveyance system, or BMP;
- The vegetated landscape should use appropriate turf grasses;
- Downspouts must be at least 10 feet away from the nearest impervious surface to discourage “re-connections;”
- Dry wells, French drains, rainwater collection tanks, or rain gardens (small bioretention areas) may be utilized to compensate for areas with disconnection lengths less than 75 feet. The volume shall be equal to the requirements found in the above table to receive 100% reduction in impervious cover. See Schematic of Dry Well in Figure 5.27;

- For those rooftops draining directly to a creek buffer, a rooftop disconnection credit can be used;
- Credit is documented during the development permit process and verified with the final grading plan as part of the development permit; and
- When more than one downspout drains in one direction, the shortest disconnection length will be used in the above table to determine the impervious cover deduction. For example, if the front and back downspout on one side of the house both drain towards the street (flow is combined), the distance from the front downspout to the street will be used as the disconnection length.

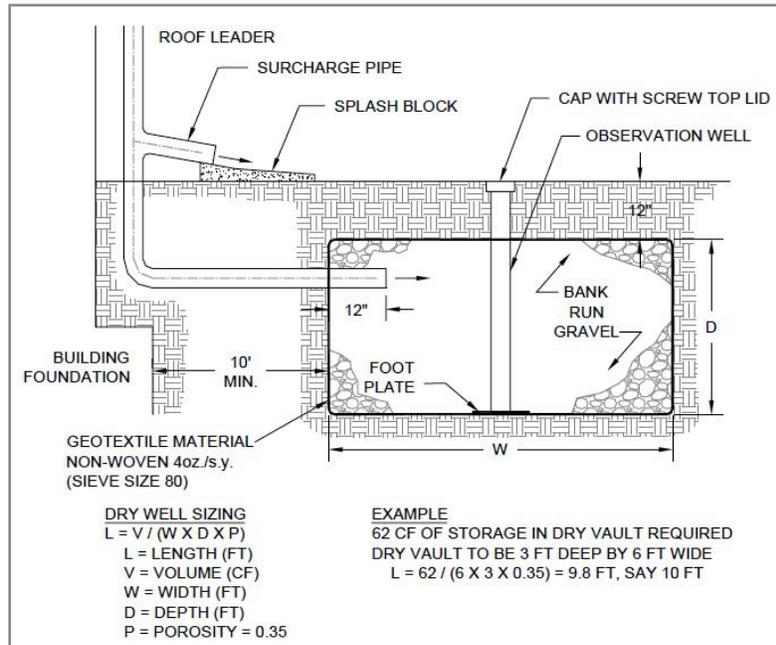


Figure 5-27: Schematic of Dry Well

Example calculation: the required water quality volume before the credit for a ten acre site with 30 single family lots would be:

Impervious cover = 3 acres = 30%

1.5-inch storm runoff volume = 0.48 inches based on Equation 2-9

Water quality volume = (0.48 inches) * (10 acres) * (43,560/12) = 17,424 cubic- feet.

Applying the credit, each single-family lot has a travel length of 35 feet from the house to the roadside curb and the lawns satisfy the vegetative cover requirement by using turf grasses. The designer chooses not to incorporate additional storage (dry wells, rain gardens, etc.) to increase credit. Thus, each house impervious cover is reduced by 40% per Table 5-1.

House roof area = 2000 square feet

40% impervious cover credit for roof from above table

Ar = Allowable impervious cover reduction per house = (2000) * (0.40) = 800 square feet

Impervious cover with credit = (3 acres) - ((30 lots) * (800 sq. ft)) = 2.45 acres

Effective impervious cover = 25%

1.5-inch storm runoff volume = 0.41 inches based on Equation 4-9

Water Quality Volume = (0.41 inches) * (10 acres) * (43,560/12) = 14,974 cubic-feet.

The BMP water quality storage volume is reduced by 14% in this example.