

## Summary Fact Sheet

**Category:** 2.0 Filtering Technologies

**Practice:** 2.2 Dry Wells

**General Description:** A dry well typically consists of a pit filled with large aggregate such as gravel or stone. Alternately, it may consist of a perforated drum placed in a pit and surrounded with stone. Dry wells capture and infiltrate water from roof downspouts or paved areas. The surface is typically at or just below existing grade. It may be covered by grass or other surface.

### Water Quantity Controls

The peak discharge rate for the design storm should not exceed the infiltration rate (cfs) into the subsoil. Storage volume calculations are provided in PFM section 6-1300 and in the *Northern Virginia BMP Handbook*.

### Water Quality Controls

Water quality benefits are similar to those for infiltration trenches (see fact sheet 3.1). Phosphorus removal efficiencies for infiltration trenches are specified in the *Northern Virginia BMP Handbook* as follows:

- 50% removal for trenches that capture 0.5" of runoff from the impervious area
- 65% removal for trenches that capture 1.0" of runoff from the impervious area

**Location:** Dry wells are suitable for treating small impervious areas (as an alternative to infiltration trenches) and may be useful on steeper slopes where trenches or other facilities cannot be installed. Dry wells are particularly suited to treat runoff from residential driveways or rooftop downspouts. It is important to avoid installation in large areas with high sediment loads and in soils with limited permeability. Dry wells are not appropriate for treating runoff from large impervious surfaces such as parking lots.

### Design Construction and Materials:

Design guidelines for dry wells are similar to those for infiltration trenches. Detailed design criteria for infiltration trenches are provided in PFM section 6-1300 and in the *Northern Virginia BMP Handbook*.

Cost components for a dry well are given below.

Item	Unit	Estimated unit cost (2005 dollars)
Excavation	C.Y.	\$8 - \$10
Perforated tank or drum with cap	Ea.	\$100 - \$200
Gravel	C.Y.	\$30 - \$35
Inlet and outlet pipes	L.F.	\$8 - \$15

**Cost:** The cost for a dry well to treat runoff from ½ impervious acre is comprised of both the installation cost and annualized costs. A dry well is assumed to have a lifespan of 25 years, at which point it will be removed and replaced.

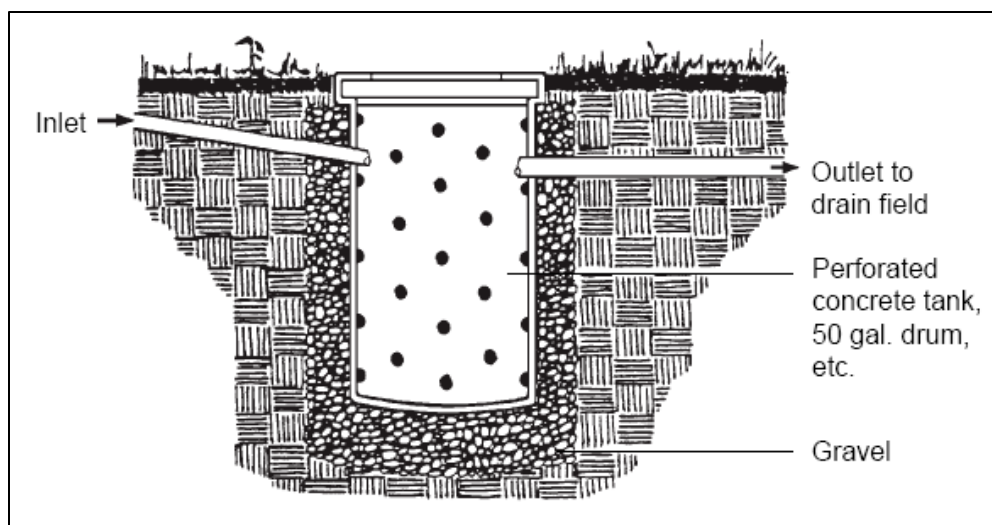
Item	Required Cost per Year (2005 Dollars)													
	0	1	2	3	4	5	6	7	8	9	10	...	25	
Installation <sup>1</sup>	10,000													
Debris removal		250	250	250	250	250	250	250	250	250	250			
Minor parts replacement				500			500			500				
Remove & Replace														10,000
<b>Total Cost</b>	<b>10,000</b>	<b>250</b>	<b>250</b>	<b>750</b>	<b>250</b>	<b>250</b>	<b>750</b>	<b>250</b>	<b>250</b>	<b>750</b>	<b>250</b>			<b>10,000</b>
Annualized Cost	\$800 / year (includes replacement in year 25)													

<sup>1</sup>Developer Cost. Not included in annualized cost.

**Maintenance:** Dry wells are typically employed in single-family homes; maintenance is usually the responsibility of the homeowner. Maintenance consists of debris removal from the rain gutters and dry well surface (or chamber, depending on design), and minor parts replacement.

**Performance and Inspection:** Inspect the dry well and rain gutters for debris accumulation. Perform this inspection:

- bi-annually in spring and fall, and
- after large storm events.



**Dry Well Schematic**

Source: Northern Virginia BMP Handbook

**Potential LEED Credits:**

Primary: Sustainable Sites – Credit 6 “Stormwater Management” (1-2 Points)

Other: Innovation & Design Process (1-4 Points)

**Links to Additional Information:**

Fairfax County Department of Public Works and Environmental Services. 2001. “Stormwater runoff quality control criteria.” *Public Facilities Manual*, 6-0400. Available at <http://www.co.fairfax.va.us/dpwes/publications/pfm/6-0400.htm>

Northern Virginia Planning District Commission. 1992. *Northern Virginia BMP Handbook: A Guide to Planning and Designing Best Management Practices in Northern Virginia*. Available at <http://www.novaregion.org/pdf/NVBMP-Handbook.pdf>