


BIO-6: Dry Extended Detention Basin

Dry extended detention basins (DEDBs) are basins whose outlets have been designed to detain the stormwater quality design volume, SQDV, for 36 to 48 hours to allow particulates and associated pollutants to settle out. DEDBs do not have a permanent pool; they are designed to drain completely between storm events. They can also be used to provide hydromodification and/or flood control by modifying the outlet control structure and providing additional detention storage. The slopes, bottom, and forebay of DEDBs are typically vegetated. Considerable stormwater volume reduction can occur in DEDBs when they are located in permeable soils and are not lined with an impermeable barrier.

<i>Also known as:</i>
<ul style="list-style-type: none"> <li>➤ <i>Dry Ponds</i></li> <li>➤ <i>Detention Ponds</i></li> </ul>

<p>Dry Extended Detention Basin,</p>

For dry extended detention basins to be considered as biotreatment BMPs, they must meet all applicable guidelines described in this Fact Sheet and in [Appendix XII](#).

If dry extended detention basins do not meet these guidelines, they shall be considered treatment control BMPs.

**Level 1 Screening Considerations**

- Infiltration feasibility is not generally applicable to DEDBs; however some incidental infiltration will occur.
- The potential risk of groundwater contamination and geotechnical hazards should be considered in determining whether a liner is needed.

**Opportunity Criteria**

- Most applicable for larger drainage areas where significant area is available at the downstream end of the drainage area.
- Can be integrated into open areas or play fields.
- Not ideal in areas where high seasonal groundwater would limit depth or require lining.
- Can be integrated into flood control facilities where essential functions of flood control facilities are not compromised.

**Criteria for Categorization of DEDBs as Biotreatment BMP**

In order to to be categorized as Biotreatment BMPs, DEDBs should be designed to meet the following minimum criteria. DEDBs not meeting these criteria but meeting the OC-Specific design criteria listed next are categorized as treatment control BMPs.

- Maximum treatment depth should be 6 feet
- Robust, diverse, and extensive vegetation should be designed and maintained to an average height not less than > 12 inches. Soils should be amended per soil amendment criteria contained in MISC-2: Amended Soils if vegetation cannot be readily established.

- Hardscape within basin should be limited to essential access roads.
- Design should include a vegetated sediment forebay that encompasses between 20 and 30 percent of the basin volume.
- The basin should be designed to draw down over 48 to 72 hours. The basin should be designed such that drawdown time for the bottom 50 percent of the treatment volume is not less than 2/3 of the entire drawdown time.
- The L:W ratio of the basin should meet or exceed 2:1.
- A micropool should be provided upstream of the outlet structure and/or media filtration should be integrated with the outlet structure.

### ***OC-Specific Design Criteria and Considerations***

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- Minimum set-backs from foundations and slopes should be observed
- Infiltration should not cause geotechnical concerns related to slope stability or erosion. Proposed basins in areas with slopes greater than 15 percent or within 200 feet from the top of a hazardous slope or landslide area require geotechnical investigation.
- Depth from bottom of facility to seasonal high groundwater table should be  $\geq 2$  feet.
- DEDBs are preferably off-line, designed to bypass peak flows.
- Minimum freeboard equals 1 foot for offline facilities and 2 feet for online facilities.
- Maximum side slope (H:V) preferably equals 4:1 interior and 3:1 exterior; steeper slopes permitted with fencing and geotechnical analysis.
- Longitudinal slope preferably 0%-2%.
- Low flow channel with gravel infiltration trench preferably provided where infiltration is allowable; designed to eliminate maximum estimated dry weather flowrate.

### ***Computing Sizing Criteria for Dry Extended Detention Basins***

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- DEDBs should be sized for the DCV, calculated per the Simple Design Capture Volume Sizing Method.
- Routing calculations should demonstrate that the outlet structure is designed to achieve the target drawdown time and pattern: The basin should be designed to draw down over 48 to 72 hours. The basin should be designed such that drawdown time for the bottom 50 percent of the treatment volume is not less than 2/3 of the entire drawdown time.

### ***Configuration for Use in a Treatment Train***

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- Dry extended detention basins may be preceded in a treatment train by HSCs and LID BMPs in the drainage area, which would reduce the remaining biotreatment/treatment control requirements and allow the basin to be smaller in volume.
- Dry extended detention basins can be located upstream of LID or treatment control BMPs to provide peak flow equalization.

### ***Additional References for Design Guidance***

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- CASQA BMP Handbook for New and Redevelopment:  
<http://www.cabmphandbooks.com/Documents/Development/TC-22.pdf>

- SMC LID Manual (pp 145):  
[http://www.lowimpactdevelopment.org/guest75/pub/All\\_Projects/SoCal\\_LID\\_Manual/SoCalLID\\_Manual\\_FINAL\\_040910.pdf](http://www.lowimpactdevelopment.org/guest75/pub/All_Projects/SoCal_LID_Manual/SoCalLID_Manual_FINAL_040910.pdf)
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 2:  
[http://dpw.lacounty.gov/DES/design\\_manuals/StormwaterBMPDesignandMaintenance.pdf](http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf)
- City of Portland Stormwater Management Manual (Pond, page 2-68)  
<http://www.portlandonline.com/bes/index.cfm?c=47954&a=202883>
- San Diego County LID Handbook Appendix 4 (Factsheet 3):  
<http://www.sdcountry.ca.gov/dplu/docs/LID-Appendices.pdf>