



## ENGINEERING AND ENVIRONMENTAL SERVICES

### Stormwater Division

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## DRY POND DESIGN SUMMARY

### Stormwater Management Construction Plan Review:

A complete Stormwater management construction plan submittal includes a design summary for each Stormwater BMP, design calculations, plans and specifications showing BMP, inlet and outlet structure details.

### I. PROJECT INFORMATION

For projects with multiple SCMs, specify which SCM this worksheet applies to:

Project Name: \_\_\_\_\_ Phase: \_\_\_\_\_

PIN: \_\_\_\_\_ Case #: \_\_\_\_\_

Legal Name of Owner: \_\_\_\_\_

Owner Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Owner Address: \_\_\_\_\_

Design Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_

Detention provided for: \_\_\_\_\_ 1-year \_\_\_\_\_ 2-year \_\_\_\_\_ 10-year \_\_\_\_\_ other \_\_\_\_\_

Dam Height: \_\_\_\_\_ (feet) Dam Classification: \_\_\_\_\_

### II. GENERAL MINIMUM DESIGN CRITERIA FOR ALL SCMs *(Revised 1/3/2017)*

#### GENERAL MDC 1: SIZING

Design storm depth	ft
Design runoff volume	ft <sup>3</sup>

*(One year, 24 hour storm event)*

*(Minimum calculation of entire drainage area)*

#### GENERAL MDC 2: CONTAMINATED SOILS

Contaminated soils within footprint?	Y / N
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*(Brownfield location?)*

#### GENERAL MDC 3: SIDE SLOPES

Maximum vegetated side slopes	: 1
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*(Maximum 3:1 vegetated slopes)*

**GENERAL MDC 4: EROSION PROTECTION**

10 year storm outlet discharge	cfs	<i>(Must be non-erosive)</i>
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**GENERAL MDC 5: EXCESS FLOW**

Emergency outlet elevation	ft
Emergency spillway width	ft
Emergency spillway side slopes	: 1
Emergency spillway slope	%

**GENERAL MDC 6: DEWATERING**

Dewatering method		
Drawdown orifice size	in	<i>(If applicable)</i>

**GENERAL MDC 7: CLEAN OUT AFTER CONSTRUCTION**

Every SCM impacted by sediment and erosion control during the construction phase shall be cleaned out and converted to its approved design state
In addition, installed SCM's should be inspected and cleaned after each heavy rainfall

**GENERAL MDC 8: MAINTENANCE ACCESS**

Maintenance access width	ft	<i>(Minimum width of 25 feet)</i>
Side slopes within maintenance access	: 1	<i>(Maximum 3:1)</i>
Access extend to public right of way	Y / N	

**GENERAL MDC 9: EASEMENTS**

All SCMs and associated maintenance accesses located in permanent recorded easement? (shown and labeled in easement)	Y / N	<i>(Does not include single family residential lots)</i>
Maintenance access width around SCM	ft	<i>(Minimum width of 10 feet)</i>

**GENERAL MDC 10: SINGLE FAMILY RESIDENTIAL LOTS**

Plats for residential lots that contain an SCM shall include: (a) The specific location of the SCM on the lot (b) A typical detail for the SCM to be used (c) A note that the SCM on the property has been required to meet stormwater regulations and that the property owner may be subject to enforcement actions if the SCM is removed, relocated, or altered without prior approval
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**GENERAL MDC 11: OPERATION AND MAINTENANCE AGREEMENT**

Acknowledgement that the association shall continuously operate and maintain the stormwater control and management facilities	<input type="checkbox"/>
Establishment of an escrow account which can be spent solely for sediment removal, structural, biological or vegetative replacement, major repair, or construction of the SCM	<input type="checkbox"/>

*(Check box when completed)*

**GENERAL MDC 12: OPERATION AND MAINTENANCE PLAN**

Specify all operation and maintenance work necessary for the function of all SCM components	<input type="checkbox"/>
Specify methods to be used to maintain or restore the SCMs to design specifications in the event of failure	<input type="checkbox"/>
O&M plan shall be signed by the owner and notarized	<input type="checkbox"/>

*(Check box when completed)*

**III. DRY POND MINIMUM DESIGN CRITERIA** *(Revised 1/3/2017)*

**DRY POND MDC 1: SEPARATION FROM THE SHWT**

SHWT elevation	ft
Bottom elevation of pond	ft

*(Determined through soil tests)  
(Minimum 6 inches above SHWT)*

**DRY POND MDC 2: TEMPORARY POOL DEPTH**

Depth of temporary pool	ft
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*(Maximum depth of 10 feet)*

**DRY POND MDC 3: UNIFORM GRADING AND POSITIVE DRAINAGE**

Uniform grade towards outlet?	Y / N
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**DRY POND MDC 4: LOCATION OF INLET(S) AND OUTLET**

Distance between inlet and outlet	ft
Length to width ratio	: 1

*(Avoid short circuiting)*

**DRY POND MDC 5: PRETREATMENT**

Type of pretreatment	
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*(Gravel verges, filter strips, grassed swales or forebays)*

**DRY POND MDC 6: DRAWDOWN TIME**

Drawdown time	days	<i>(2-5 day drawdown to permanent pool level)</i>
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**DRY POND MDC 7: PROTECTION OF THE RECEIVING STREAM**

One-year, 24 hour runoff rate	cfs	<i>(Must be non-erosive)</i>
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**DRY POND MDC 8: OUTLET**

Permanent pool at outlet?	Y / N
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**DRY POND MDC 9: VEGETATION**

The dam structure (including the front and back embankment slopes) shall be planted with non-clumping turf grass	<i>(Trees and woody shrubs not allowed)</i>
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**IV. DRY POND DESIGN CHARACTERISTICS**

Pond bottom elevation	_____	ft
1-year storm orifice/weir elevation	_____	ft
1-year storm water surface elevation	_____	ft
2-year storm orifice/weir elevation	_____	ft
2-year storm water surface elevation	_____	ft
10-year storm orifice/weir elevation	_____	ft
10-year storm water surface elevation	_____	ft
Emergency spillway elevation	_____	ft
Top of embankment/dam	_____	ft
Maximum water surface elevation	_____	ft

**At BMP**

	1- Year	2-year	10-year	_____-year
Inflow	_____ cfs	_____ cfs	_____ cfs	_____ cfs
Routed Outflow	_____ cfs	_____ cfs	_____ cfs	_____ cfs

**At Analysis Point(s) that BMP contributes to**

	1- Year	2-year	10-year	_____-year
Pre-development	_____ cfs	_____ cfs	_____ cfs	_____ cfs
Post-development w/o detention	_____ cfs	_____ cfs	_____ cfs	_____ cfs
With Detention	_____ cfs	_____ cfs	_____ cfs	_____ cfs

## V. REQUIRED ITEMS CHECKLIST

The following checklist outlines design requirements. Initial in the space provided to indicate the following design requirements have been met and supporting documentation is attached.

### Applicant's Initials

- \_\_\_\_\_ a. Riprap outlet protection, if provided, reduces flow to non-erosive velocities (provide calculations).
- \_\_\_\_\_ b. The basin side slopes are no steeper than 3:1.
- \_\_\_\_\_ c. Vegetative cover for the basin is specified. No woody vegetation is permitted on the embankment.
- \_\_\_\_\_ d. A trash rack or similar device is provided for both the overflow and orifice. Flat top trash racks are not acceptable. Access hatch has been provided.
- \_\_\_\_\_ e. A recorded drainage easement is provided for each basin including access to the nearest right-of-way and is graded per NCDEQ Stormwater BMP Manual, Part C-0.
- \_\_\_\_\_ f. If the basin is used for sediment and erosion control during construction, a note requiring clean out and vegetative cover being established prior to use as a dry detention basin shall be provided on the construction plan.
- \_\_\_\_\_ g. Anti-floatation calculations are provided for the riser structure.
- \_\_\_\_\_ h. A plan view of the pond with grading shown is provided.
- \_\_\_\_\_ i. A profile through the forebay, main pond and spillway is provided. Water surface elevations are shown on the profile.
- \_\_\_\_\_ j. Riser structure details are provided.
- \_\_\_\_\_ k. Compaction specifications for the embankment are provided on the plan.
- \_\_\_\_\_ l. Dam designed to account for a 5.00% settlement factor.
- \_\_\_\_\_ m. The minimum top of dam width has been provided for the pond embankment top width per NCDEQ Stormwater BMP Manual, Part C-0.
- \_\_\_\_\_ n. The lowest point of the dry pond shall be a minimum of 6 inches above the SHWT.
- \_\_\_\_\_ o. The maximum depth of the temporary pool shall be 10 feet.
- \_\_\_\_\_ p. The bottom of the pond shall be graded uniformly to flow towards the outlet structure.
- \_\_\_\_\_ q. The inlet(s) and outlet shall be located in a manner than avoids short circuiting.
- \_\_\_\_\_ r. Pretreatment devices are provided to settle sediment and prevent erosion.

- \_\_\_\_\_ s. The design volume shall draw down between 2 to 5 days.
- \_\_\_\_\_ t. The dry pond shall discharge the runoff from the one-year, 24-hour storm in a manner that reduces hydrologic impacts to the receiving stream.
- \_\_\_\_\_ u. The dry pond shall include a small permanent pool near the outlet orifice to reduce clogging and keep floating debris away.

**NOTE: Executed Stormwater Facility Operations and Maintenance Permit Agreement and payment of surety are required prior to Stormwater Permit issuance.**