CECIL SOIL CONSERVATION DISTRICT
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STEP BY STEP DECISION AID TO DETERMINE EMBANKMENT DESIGN CATEGORY AND APPROVAL AUTHORITY:

Project Name: _____ **Date:** _____

Pond Label: _____ **CSCD Tracking No.:** _____

Step 1 Does pond have a "Weir Wall" Spillway?
☐ Yes - Go to Step 11
☐ No - Go to Step 2

Step 2 Does the pipe conduit have a riser or control structure[1]?
☐ Yes - Go to Step 11
☐ No - Go to Step 3

Step 3 Does the pipe conduit through the embankment traverse a roadway or railroad?
☐ Yes - Go to Step 4
☐ No - Go to Step 9

Step 4 Is there a permanent pool > 3 ft?
Design permanent pool depth = _____ ft > 3 ft?
☐ Yes - Go to Step 11
☐ No - Go to Step 5

Step 5 Is HW-TW ≤ 10 ft per MDE Dam Safety Policy Memo #2?
Design HW Elevation = _____
Design TW Elevation = _____
HW – TW = _____ ft ≤ 10 ft?
☐ Yes - Go to Step 10
☐ No - Go to Step 6

Step 6 Is HW_{DEPTH} / D ≤ 2 per MDE Dam Safety Policy Memo #2?
Design HW_{DEPTH} = _____ ft / D = _____ ft = _____ ≤ 2?
☐ Yes - Go to Step 10
☐ No - Go to Step 7

Step 7 Does the embankment meet the minimum width required for SUPERWIDE classification per Table 1 in MDE Dam Safety Policy Memo #5?
Design Height of Embankment, H = _____ ft (Step 16)
Design Maximum Storage Volume, Vw = _____ ac-ft
Minimum Embankment Width Required in Table 1 of Memo #5, W_R = ____ ft
Is Design Minimum Embankment Width, W_D = _____ ft ≥ W_R
☐ Yes - Go to Step 8
☐ No - Go to Step 11

Step 8 Is HW_{DEPTH} / D ≤ 4 per MDE Dam Safety Policy Memo #2?
Design HW_{DEPTH} / D = _____ ≤ 4? (Step 6)
☐ Yes - Go to Step 10
☐ No - Go to Step 11

Step 9 Is the pipe conduit the spillway for a SWM BMP?
☐ Yes - Go to Step 11
☐ No - Go to Step 10

Step 10 *CULVERT.* ***REVIEW BY LOCAL SWM APPROVAL AUTHORITY.***

Step 11 Is maximum storage volume ^{2} ≥ 50 ac-ft?
MSV ^{2} = _____ ac–ft ≥ 50 ac-ft?
☐ Yes - Go to Step 12
☐ No - Go to Step 14

Step 12 Is the principal spillway a weir [wall]?
☐ Yes - Go to Step 15
☐ No - Go to Step 13

Step 13 Does pond meet the criteria for SUPERWIDE EMBANKMENT per MDE Dam Safety Policy Memo #5? **(Step 7)**
☐ Yes - Go to Step 15
☐ No - Go to Step 15

Step 14 Is contributing drainage area ≥ 640 acres?
Design DA = _____ acres ≥ 640 acres?
☐ Yes - Go to Step 15
☐ No - Go to Step 16

Step 15 *SUPERWIDE DAM OR NOT. Submit JPA for* ***MDE DAM SAFETY REVIEW****.*

Step 16 Is embankment height [4] ≥ 20 ft?
Lowest point on the crest of dam, X = _____
Lowest point of fill on the upstream face of dam (fill includes human-placed materials such as spillways-conduits-cradles), Y = _____
X – Y = _____ ft ≥ 20 ft?
☐ Yes - Go to Step 17
☐ No - Go to Step 18

Step 17 *DAM. Submit JPA for **MDE DAM SAFETY REVIEW**. Prior to submitting, determine whether dam is a superwide embankment per MDE Dam Safety Policy Memo #5 and if applicable follow superwide dam requirements. If pond is constructed on fill, follow dam safety design/review criteria (under development) for ponds constructed on fill.*

Step 18 Is maximum active storage volume [3] ≤ 8,000 cf?
"brim up" storage = _____ cf ≤ 8,000 cf?
☐ Yes - Go to Step 19
☐ No - Go to Step 20

Step 19 *MICRO-POND / ESD FACILITY. Exempt from small pond approval. Review by **REVIEW BY LOCAL SWM APPROVAL AUTHORITY**.*

Step 20 Is embankment fill around reservoir rim ≤ 2 ft above natural ground surface? MDE Dam Safety Policy Memo #13
☐ Yes - Go to Step 21
☐ No - Go to Step 24

Step 21 Is the projection of "L" horizontally downstream from the pond bottom below the existing or proposed ground per MDE Dam Safety Policy Memo #13?
L = 10(H) + 20 ft, where
H = Lowest point on the crest of dam – Lowest point of fill on the upstream face of dam (fill includes human-placed materials such as spillways-conduits-cradles) = X – Y = _____ ft (Step 16)
L = 10(H) + 20 ft = _____ ft
☐ Yes - Go to Step 22
☐ No - Go to Step 24

Step 22 Is the existing or proposed downstream ground slope > 10% at any point below design water surface elevation (WSEL) + 1 ft and within projection of "L"? MDE Dam Safety Policy Memo #13
Design Elevation WSEL = _____ + 1.0 ft = _____
Is maximum ground slope within projection "L" _____ % > 10 %?
☐ Yes - Go to Step 24
☐ No - Go to Step 23

Step 23 *EXCAVATED SMALL POND. Design as Code 378 excavated pond. Exempt from small pond approval.* ***REVIEW BY LOCAL SWM APPROVAL AUTHORITY.***

Step 24 Is height of embankment[4] < 4 ft?

Lowest point on the crest of dam, X = _____

Lowest point of fill on the upstream face of dam (fill includes human-placed materials such as spillways-conduits-cradles), Y = _____

X – Y = _____ ft < 4 ft? (Step 16)

☐ Yes - Go to Step 26

☐ No - Go to Step 25

Step 25 Is maximum active storage volume[3] volume < 40,000 cf and height of embankment[4] ≤ 6 ft?

Design 100-YR Elevation = _____

Design 100-YR volume = _____ cf < 40,000 cf ☐ **Yes** ☐ **No**

X – Y = _____ ft ≤ 6 ft (Step 16) ☐ **Yes** ☐ **No**

☐ All Yes - Go to Step 26

☐ No - Go to Step 31

Step 26 Is structure a small impoundment per MDE Dam Safety Policy Memo #4?

X – Y = _____ ft ≤ 6 (Step 16) ☐ **Yes** ☐ **No**

X – Z = _____ ft ≤ 12 ☐ **Yes** ☐ **No**

Maximum Storage Volume _____ ac-ft at maximum WSEL at design storm

No Emergency Spillway ≤ 1.0 ac-ft ☐ **Yes** ☐ **No**

With Emergency Spillway ≤ 1.5 ac-ft ☐ **Yes** ☐ **No**

☐ All Yes - Go to Step 29

☐ No - Go to Step 27

Step 27 Does pond meet the criteria for SUPERWIDE EMBANKMENT per MDE Dam Safety Policy Memo #5? **(Step 7)**

☐ Yes - Go to Step 29

☐ No - Go to Step 28

Step 28 Complete Dam Breach Analysis[5].

☐ Low Hazard ☐ Significant Hazard ☐ High Hazard

Is pond low hazard?

☐ Yes - Go to Step 29

☐ No – Go to Step 30

Step 29 *Exempt from small pond approval. Follow criteria for Chapter 3 practice.* ***REVIEW BY LOCAL SWM APPROVAL AUTHORITY.***

Step 30 *DAM. Submit JPA for **MDE DAM SAFETY REVIEW**.*

Step 31 Does pond meet the criteria for SUPERWIDE EMBANKMENT per MDE Dam Safety Policy Memo #5? **(Step 7)**
☐ Yes - Go to Step 32
☐ No - Go to Step 35

Step 32 Is the pond located in Jones Fall, Gwynn's Falls, or Herring Run watersheds?
☐ Yes - Go to Step 34
☐ No – Go to Step 33

Step 33 *SUPERWIDE SMALL POND. Design to meet superwide small pond/dam requirements per MDE Dam Safety Policy Memo #5; **REVIEW BY CECIL SCD**.*

Step 34 *SUPERWIDE SMALL POND in regulated watershed. Design to meet superwide small pond/dam requirements per MDE Dam Safety Policy Memo #5. Submit JPA for **MDE DAM SAFETY REVIEW**.*

Step 35 Is structure a small impoundment per MDE Dam Safety Policy Memo #4?
X – Y = _____ ft ≤ 6 (Step 16) ☐ **Yes** ☐ **No**
X – Z = _____ ft ≤ 12 (Step 26) ☐ **Yes** ☐ **No**
Maximum Storage Volume _____ ac-ft at maximum WSEL at design storm
No Emergency Spillway ≤ 1.0 ac-ft ☐ **Yes** ☐ **No**
With Emergency Spillway ≤ 1.5 ac-ft ☐ **Yes** ☐ **No**
☐ All Yes - Go to Step 37
☐ No - Go to Step 36

Step 36 Complete Dam Breach Analysis[5].
☐ Low Hazard ☐ Significant Hazard ☐ High Hazard
Is pond low hazard?
☐ Yes - Go to Step 37
☐ No – Go to Step 40

Step 37 Is the pond located in Jones Fall, Gwynn's Falls, or Herring Run watersheds?
☐ Yes - Go to Step 39
☐ No – Go to Step 38

Step 38 *SMALL POND. Design as regular Code 378 pond. **REVIEW BY CECIL SCD**.*

Step 39 *SMALL POND in regulated watershed. Design as regular Code 378 pond. Submit JPA for **MDE DAM SAFETY REVIEW**.*

Step 40 *DAM. Submit JPA for **MDE DAM SAFETY REVIEW**.*

FOOTNOTES:

[1] Control Structure: Any device that controls the flow into the pipe including, but not limited to a riser, orifice plate, weir, or gabion baskets. An open culvert is not considered a control structure provided the pipe diameter is uniform through the embankment or increases in diameter in the downstream direction when additional flow is added.

[2] Maximum Storage Volume ("Brim Full" or "Brim Up"): The National Inventory of Dams defines maximum storage as the total storage space in a reservoir below the maximum attainable water surface elevation. This is the "brim full" volume. If the probable maximum flood (PMF) does not fill the storage space, then the PMF volume can be used as the maximum storage volume, and using the brim full volume would be conservatively acceptable. The upper limit of the storage volume is the top of dam/incipient point of overflow, not the invert of the emergency spillway. For media ponds, include the volume of water in the pore space (voids) of the filter media, which can be approximated using a porosity of 0.4.

[3] Maximum Active Storage Volume: This is the portion of the maximum storage volume that would contribute to the breach volume. Dead storage below the elevation of the downstream toe of the embankment that does not contribute to the breach volume may be excluded from the maximum storage volume for the referenced purposes. For media ponds, if the filter media is part of the embankment height, the maximum storage volume includes the volume of water in the pore space (voids) of the filter media, which can be approximated using a porosity of 0.4.

[4] Embankment height has been defined by the MDE Dam Safety Division as the vertical distance between the lowest point of fill on the upstream face of the dam to the lowest point on the crest of the dam (excluding the auxiliary spillway). Oftentimes this is found at the principal spillway location but can be at other locations along the embankment. For the purposes of this definition, the lowest point of fill includes human-placed materials such as spillway conduits and cradles. Refer to MDE Dam Safety Policy Memorandum No. 22 – Determining Embankment Height for background information and diagrams.

[5] See guidance for dam breach analysis published by MDE titled "Guidance for Completing a Dam Breach Analysis for Small Ponds and Dams in Maryland" draft dated May 2018.

[6] This STEP-BY-STEP DECISION AID document, created by Cecil Soil Conservation District, follows the **February 25, 2025 MDE Stormwater, Dam Safety, and Flood Management Program Flow Chart for Determining Embankment Design Category and Approval Authority**. Copies are available in .pdf and .docx from the Cecil Soil Conservation District.

Notes regarding Ponds in Coldwater Resource Watersheds:

Effective June 14, 2021, small ponds located in Use III and IV watersheds no longer require a permit from the Dam Safety Division. Thermal concerns in accordance with DNR guidance must be addressed and upheld by the small pond approval authority.

Watersheds in Cecil County draining to streams that are designated as coldwater resources are considered regulated watersheds and must meet MDE Thermal Design Criteria in order to qualify to be reviewed and approved by Cecil Soil Conservation District. See MDE publication **Dam and Small Pond Approval Guidelines in Coldwater Resource Watersheds, August 2023** for "design guidance" for small ponds in a coldwater resource watershed. Coldwater

Resources such as a stream with Use Class III/III-P can be determined using the mapping tool for Designated Use Classes for Maryland's Surface Waters: (https://mdewin64.mde.state.md.us/WSA/DesigUse/index.html) or as Maryland Trout Wateshed; Benthic Coldwater Macroinvertebrate watershed; or, Put and Grow Trout Watershed which is identified on the Maryland DNR Freshwater Fisheries – Coldwater Resource Mapping Tool: (https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=dc5100c0266d4ce89df813f34678944a).

REFERENCES:

USDA Natural Resources Conservation Service Maryland Conservation Practice Standard Pond Code 378, January 2000 or latest revision.

MDE Dam Safety Policy Memorandum #2 - Roadway/Railroad Embankment with Culvert Crossing, February 15, 2022 or latest revision.

MDE Dam Safety Policy Memorandum #4 – Hazard Classification of Small Impoundments, January 29, 2025 or latest revision.

MDE Dam Safety Policy Memorandum #5 - Superwide Roadway/Railroad Embankments, February 16, 2022 or latest revision.

MDE Dam Safety Policy Memorandum #13 – Excavated Ponds, April 24, 2023 or latest revision.

MDE Dam Safety Policy Memorandum #20 – Spillways Discharging to Storm Drain Networks, October 27, 2023 or latest revision.

MDE Dam Safety Policy Memorandum #22 – Determining Embankment Height, January 29, 2025 or latest revision.

MDE Dam Safety Policy Memorandum #23 – Small Ponds Not Requiring Small Pond Approval, January 29, 2025 or latest revision.

*The MDE Dam Safety Policy & Technical Memorandums that are stated herein are available on the MDE website. As the design professional you are expected to be knowledgeable of all these MDE policies and memorandums and keep up-to-date with any revisions to these documents. They can be found at the following website addresses:

There is a total of 23 (1-23) MDE Dam Safety Policy Memoranda available at the following URL address as of the printing of this document:
https://mde.maryland.gov/programs/water/damsafety/pages/guidelines.aspx

There is a total of 13 (1-12,16) MDE Technical Memoranda available at the following URL address as of the printing of this document:
https://mde.maryland.gov/programs/water/stormwatermanagementprogram/pages/planreviewforstateandfederalprojects.aspx