

County Council Of Howard County, Maryland

2019 Legislative Session

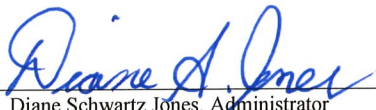
Legislative Day No. 11

Resolution No. 123 -2019

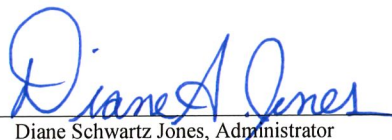
Introduced by: The Chairperson at the request of the County Executive

A RESOLUTION amending Volume I (Storm Drainage) of the Design Manual; providing that development within the Tiber Branch and Plumtree watersheds provide adequate management and conveyance of runoff for the 24-hour, 100-year and 3.55-hour, 6.6 inch storm event to a stormwater management facility; and generally relating to the adoption of revised standards for storm drainage systems.

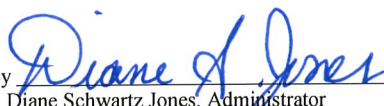
Introduced and read first time September 3, 2019.

By order 
Diane Schwartz Jones, Administrator

Read for a second time at a public hearing on September 16, 2019.

By order 
Diane Schwartz Jones, Administrator

This Resolution was read the third time and was Adopted___, Adopted with amendments , Failed___, Withdrawn___, by the County Council on October 7, 2019.

Certified By 
Diane Schwartz Jones, Administrator

NOTE: [[text in brackets]] indicates deletions from existing law; TEXT IN SMALL CAPITALS indicates additions to existing law; ~~Strike-out~~ indicates material deleted by amendment; Underlining indicates material added by amendment.

1 **WHEREAS**, in accordance with Section 18.903 of the Howard County Code, the
2 Design Manual sets forth Howard County’s technical standards for the design,
3 construction, and inspection of stormwater management systems; and
4

5 **WHEREAS**, the County has proposed changes to Volume I (Storm Drainage) of
6 the Design Manual to require development within the Tiber Branch and Plumtree
7 watersheds to provide adequate management and conveyance of runoff for the 24-hour,
8 100-year and 3.55-hour, 6.6 inch storm event to a stormwater management facility.
9

10 **NOW, THEREFORE, BE IT RESOLVED** by the County Council of Howard
11 County, Maryland this 7th day of October, 2019 that the following sections of
12 Volume I (Storm Drainage) of the Design Manual are amended as shown in the pages
13 attached as Exhibit A:

- 14 1. Section 4.1.1, Storm Drain Design Criteria
- 15 Subsection A, Design Storm Criteria
- 16 2. Section 5.2.1, Stormwater Control Requirements

Exhibit A

CHAPTER 4 HYDRAULICS

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4.1 CLOSED CONDUIT SYSTEMS

4.1.1 Storm Drain Design Criteria

A. Design Storm Criteria

1. Closed conduit drainage systems shall be designed for the 10-year storm. For drains in sumps, within public rights-of-way or public easements, there shall be modifications of the “cA” and “I” computations to account for the 25-year storm event, as set forth in the sample computations at the end of this chapter. For privately owned and maintained storm drain systems, the “cA” and “I” modifications shall not be required.
2. When a closed conduit system is installed to replace an open swale drainage system serving drainage areas of 30 acres or more and/or having a 10- year discharge of 100 cfs or more, the system shall be designed for the 100-year storm.
3. Inlet design shall be based on the 2-year ultimate condition storm.
4. DEVELOPMENT WITHIN THE TIBER BRANCH AND PLUMTREE WATERSHEDS, SHALL PROVIDE ADEQUATE CONVEYANCE OF RUNOFF FOR THE 24-HOUR, 100-YEAR STORM EVENT AND THE 3.55-HOUR, 6.6 INCH STORM EVENT TO A STORMWATER MANAGEMENT FACILITY.
- [[4]]5. Residential lot drainage patterns shall be in accordance with the requirements of Section 4.6 of this Design Manual.

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CHAPTER 5
STORMWATER MANAGEMENT

5 5.2 STORMWATER MANAGEMENT CRITERIA
6

7 The regulatory definition for MEP consists of two parts. The first is subjective
8 and requires that all reasonable opportunities for using ESD planning techniques
9 and practices are exhausted. Like the definition, the threshold for meeting the
10 MEP standard consists of two parts. First, MEP is met if channel stability and
11 predevelopment groundwater recharge rates are maintained and nonpoint source
12 pollution is minimized. In both the definition and performance threshold, the
13 second condition is the same; structural stormwater practices may be used only if
14 determined to be absolutely necessary. While some flexibility and best
15 professional judgment will be needed to determine when these first conditions
16 are met, the second condition is straightforward. Local plans review and
17 approval agencies should not approve structural BMPs if ESD options are
18 available.
19

20 In addition to the State regulations, section 5.2 of the latest edition of the MDE
21 Design Manual also includes standards for MEP compliance. The primary MEP
22 standard is to use ESD to reduce post development runoff to levels found in
23 natural, forested conditions. This requires capturing and treating from 1 to 2.6
24 inches of rainfall depending on site and design conditions (e.g., soils, proposed
25 imperviousness). When this goal is met, the C_{pv} , WQ_v , and Re_v requirements are
26 addressed. Designers will be responsible for determining specific rainfall targets
27 for their projects using the methods outlined in section 5.2.
28

29 There is a secondary standard that must be considered when assessing MEP
30 compliance. ESD must be used to treat runoff from 1 inch of rainfall to address
31 both WQ_v and Re_v requirements. This is a minimum level of compliance, not a
32 contingency standard that is used when specific rainfall targets cannot be met.
33 Designers must capture and treat at least 1 inch of rainfall while using ESD to
34 reduce runoff and achieve specified goals.
35

36 5.2.1 Stormwater Control Requirements

37 A. The minimum stormwater control requirements shall require that the
38 planning techniques, nonstructural practices, and design methods
39 specified in the MDE Design Manual be used to implement ESD to the
40 MEP. The use of ESD planning techniques and treatment practices must
41 be exhausted before any structural BMP is implemented. Stormwater
42 Management for development projects shall be designed in accordance
43 with the Howard County Code, Title 18, Subtitle 9. Information found in
44 this design manual is supplemental to the requirements found in the code
45 and MDE Design Manual referenced above.
46

1 The county reserves the right, on a case-by-case basis, to require that
2 management measures be provided as necessary to maintain the post-
3 development peak discharges for [[a]] 24-hour, 1-year, 10-year, [[25-year
4 and/or 100-year]] 25-YEAR, 100-YEAR STORM EVENTS, AND 3.55-HOUR,
5 6.6 INCH storm events at a level that is equal to or less than the respective
6 24-hour, 1-year, 10-year, [[25-year and/or 100-year]] 25-YEAR, 100-YEAR
7 STORM EVENTS, AND 3.55-HOUR, 6.6 INCH STORM EVENTS predevelopment
8 peak discharge rates, through stormwater management practices that
9 control volume, timing and rate of runoff. Except within in-fill
10 development, storage volume and RCN reductions by the use of
11 Alternative Surfaces and Nonstructural Practices may be considered for
12 only the 1- year event.

13
14 The 10-year design storm event shall be employed when there is no
15 control over infrastructure and the conveyance system is at design
16 capacity, or it is determined that downstream flooding (based on recorded
17 historical flooding problems) will occur as the result of the proposed
18 development. The 100-year design storm event is to be employed to
19 prevent flood damage from large frequency storm events, to maintain the
20 boundaries of the 100-year floodplain and protect the physical integrity
21 of BMP structures. Storage volume and RCN reductions by the use of
22 non-structural credit practices shall not be considered when designing for
23 the Overbank or Extreme Flood Protection.

24
25 The upstream drainage areas to the Cabin Branch crossing Shaffers Mill
26 Road, a tributary to the Dorsey Branch crossing Dorsey Mill Road and
27 the drainage area associated with Bonnie Branch, which parallels Bonnie
28 Branch Road, shall be required to provide 10-year peak management
29 control. Additional stream systems may be included at the sole discretion
30 of Howard County.

31
32 DEVELOPMENT WITHIN THE TIBER BRANCH AND PLUMTREE WATERSHED
33 SHALL BE REQUIRED TO PROVIDE PEAK MANAGEMENT CONTROL FOR 24-
34 HOUR, 10-YEAR STORM EVENTS AND 24-HOUR, 100-YEAR STORM EVENTS,
35 AS WELL AS 3.55-HOUR, 6.6-INCH STORM EVENTS. MANAGEMENT IS
36 DEFINED AS THE REDUCTION OF THE PEAK RUNOFF FOR THE PROPOSED
37 DESIGN CONDITION TO BE EQUAL OR LESS THAN THE PREDEVELOPED SITE
38 CONDITIONS MODELED AS WOODS IN GOOD CONDITIONS. MANAGEMENT
39 WILL BE ADDRESSED FOR ANY DISTURBANCE GREATER THAN 5,000 SQUARE
40 FEET THAT CREATES IMPERVIOUS AREA.

41
42 WITHIN THE TIBER BRANCH AND PLUMTREE WATERSHEDS, THE REQUIRED
43 ORDER OF ALTERNATIVE MANAGEMENT STRATEGIES SHALL BE LIMITED TO
44 THE FOLLOWING:

- 45 1. PROVIDE STORMWATER MANAGEMENT FOR ALL STORM EVENTS
46 DESCRIBED IN SECTION 5.2.1.A.

1 IF BASED ON A GEOTECHNICAL ENGINEERING REPORT THAT
2 CONCLUDES AN ADEQUATELY SIZED STORMWATER FACILITY
3 CANNOT BE CONSTRUCTED ON-SITE DUE TO EITHER THE LOCATION
4 OF GROUNDWATER, THE PRESENCE OF A ROCK STRATA THAT
5 CANNOT BE REMOVED, ON-SITE TOPOGRAPHY THAT DOES NOT
6 ALLOW FOR A GRAVITY OUTFALL, OR OTHER UNANTICIPATED
7 GEOTECHNICAL CONSTRAINTS NOT OTHERWISE SPECIFIED ABOVE,
8 THEN 2. SHALL APPLY.

- 9 2. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR,
10 100-YEAR STORM ON-SITE. PROVIDE AN EQUIVALENT REDUCTION
11 IN PEAK RUNOFF RATE FOR THE 3.55-HOUR, 6.6-INCH STORM
12 EVENTS PEAK MANAGEMENT CONTROL IN AN OFFSITE FACILITY
13 WITHIN THE SAME WATERSHED. SUCH AN OFFSITE FACILITY SHALL
14 BE CONSTRUCTED UNDER A DEVELOPER AGREEMENT AT THE SAME
15 TIME AS THE ON-SITE IMPROVEMENTS ARE CONSTRUCTED.

16
17 IF THE DEVELOPER CANNOT CERTIFY THAT THEY OWN PROPERTIES,
18 OR THAT THERE ARE OFFSITE PROPERTIES AVAILABLE FOR
19 PURCHASE THAT ARE OF ADEQUATE SIZE AND CAN SUPPORT THE
20 REQUIRED HYDRAULICS TO CONSTRUCT A MANAGEMENT FACILITY
21 WITHIN THE SAME WATERSHED THEN 3. SHALL APPLY;

- 22 3. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR,
23 100-YEAR STORM EVENTS ON-SITE. PROVIDE A FEE IN LIEU INTO AN
24 ESTABLISHED FLOOD MITIGATION CAPITAL PROJECT WITHIN THE
25 SAME WATERSHED FOR THE COST PER ACRE-FOOT OF STORAGE TO
26 PROVIDE EQUIVALENT PEAK MANAGEMENT CONTROL FOR THE
27 3.55-HOUR, 6.6-INCH STORM EVENTS. IN ORDER TO BE GRANTED
28 RELIEF FROM THE THIRD ALTERNATIVE MANAGEMENT STRATEGY,
29 THE DEVELOPER MUST SATISFY THE REQUIREMENTS FOR RELIEF
30 FROM THE FIRST AND SECOND ALTERNATIVE MANAGEMENT
31 STRATEGIES AND PROVE THAT THERE IS NO CAPITAL PROJECT IN
32 THE WATERSHED AVAILABLE TO PAY INTO.

- 33 4. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR,
34 100-YEAR STORM EVENTS ON-SITE. PAY A FEE IN LIEU INTO AN
35 ESTABLISHED STORMWATER BANK LOCATED WITHIN THE SAME
36 WATERSHED BASED ON THE REQUIRED PEAK RUNOFF RATE
37 REDUCTION TO MANAGE THE 3.55-HOUR, 6.6-INCH STORM EVENTS.

38
39 ALL PROJECTS WITHIN THE TIBER BRANCH AND PLUMTREE WATERSHEDS
40 ARE SUBJECT TO THESE REQUIREMENTS, REGARDLESS OF WHEN THEY
41 RECEIVED SUBDIVISION OR SITE DEVELOPMENT PLAN APPROVAL, AND SHALL
42 PROVIDE STORMWATER MANAGEMENT, AS OUTLINED IN THIS SECTION.

43
44 [[The upstream drainage areas to the Tiber Branch above the Patapsco
45 River and the Hudson Branch above the Tiber Branch and tributary]]
46 TRIBUTARY drainage areas to the Deep Run above any railroad crossings

1 shall be required to provide 10-year and 100-year peak management
2 control. Additional stream systems may be included at the sole discretion
3 of Howard County.
4

5 B. The use of ESD planning techniques and treatment practices shall not
6 conflict with existing State law or local ordinances, regulations, or
7 policies. Howard County shall modify planning and zoning ordinances
8 and public works codes to eliminate any impediments to implementing
9 ESD to the MEP according to the MDE Design Manual.
10

11 C. Redevelopment

12 The goal of the current redevelopment regulations is to gain water quality
13 treatment on existing developed lands while supporting County initiatives
14 to improve urban communities. Redevelopment projects offer unique
15 challenges and stormwater management ordinances need to be tailored to
16 consider County goals, available resources, and application of stormwater
17 practices within Howard County. MANAGEMENT SHALL BE IN
18 ACCORDANCE WITH CURRENT MDE REQUIREMENTS FOR THE DISTURBED
19 AREA, EXCEPT AS NOTED BELOW FOR ADDITIONAL REQUIREMENTS WITHIN
20 THE TIBER BRANCH AND PLUMTREE WATERSHEDS.
21

22 Redevelopment Planning Process:

23 The design and review processes for any redevelopment project need to
24 consider the many constraints that limit effective implementation of
25 stormwater practices. Factors such as underground infrastructure may
26 restrict available facility options, while existing storm drain elevations
27 may dictate how runoff flows through and off a site. This information
28 and other existing conditions should be evaluated during the concept
29 phase of project planning in order to assess all options for ESD
30 implementation and other possible stormwater solutions.
31

32 Alternative Management Strategies:

33 Alternative management strategies may be considered after all
34 opportunities for using ESD have been exhausted during the planning
35 process. Alternative strategies and policies for meeting stormwater
36 requirements may include, on-site and off-site structural BMPs,
37 retrofitting existing structural BMPs, stream restoration, trading policies
38 with other pollution control programs, watershed management plans, and
39 fees-in-lieu. On a case by case basis, MDE and Howard County
40 Department of Planning and Zoning will determine the conditions,
41 criteria, and program directives dedicated to implementing stormwater
42 management when an alternative or other policy is used to meet
43 redevelopment requirements.
44

45 WITHIN THE TIBER AND PLUMTREE WATERSHEDS, THE REQUIRED ORDER
46 OF ALTERNATIVE MANAGEMENT STRATEGIES TO ACHIEVE QUANTITY

1 MANAGEMENT WITHIN THE PROPOSED LIMIT OF DISTURBANCE SHALL BE
2 LIMITED TO THE FOLLOWING:

- 3 1. PROVIDE STORMWATER MANAGEMENT FOR ALL STORM EVENTS
4 DESCRIBED IN SECTION 5.2.1.A.

5 IF BASED ON A GEOTECHNICAL ENGINEERING REPORT THAT
6 CONCLUDES AN ADEQUATELY SIZED STORMWATER FACILITY CANNOT
7 BE CONSTRUCTED ON-SITE DUE TO EITHER THE LOCATION OF
8 GROUNDWATER, THE PRESENCE OF A ROCK STRATA THAT CANNOT BE
9 REMOVED, ON-SITE TOPOGRAPHY THAT DOES NOT ALLOW FOR A
10 GRAVITY OUTFALL, OR OTHER UNANTICIPATED GEOTECHNICAL
11 CONSTRAINTS NOT OTHERWISE SPECIFIED ABOVE, THEN 2. SHALL
12 APPLY.

- 13
14 2. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR, 100-
15 YEAR STORM EVENTS ON-SITE. PROVIDE AN EQUIVALENT REDUCTION
16 IN PEAK RUNOFF RATE FOR THE 3.55-HOUR, 6.6-INCH STORM EVENTS
17 PEAK MANAGEMENT CONTROL IN AN OFFSITE FACILITY WITHIN THE
18 SAME WATERSHED. SUCH AN OFFSITE FACILITY SHALL BE
19 CONSTRUCTED UNDER A DEVELOPER AGREEMENT AT THE SAME TIME
20 AS THE ON-SITE IMPROVEMENTS ARE CONSTRUCTED.

21
22 IF THE DEVELOPER CANNOT CERTIFY THAT THEY OWN PROPERTIES, OR
23 THAT THERE ARE OFFSITE PROPERTIES AVAILABLE FOR PURCHASE THAT
24 ARE OF ADEQUATE SIZE AND CAN SUPPORT THE REQUIRED HYDRAULICS
25 TO CONSTRUCT A MANAGEMENT FACILITY WITHIN THE SAME
26 WATERSHED THEN 3 SHALL APPLY;

- 27
28 3. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR, 100-
29 YEAR STORM EVENTS ON-SITE. PROVIDE A FEE IN LIEU INTO AN
30 ESTABLISHED FLOOD MITIGATION CAPITAL PROJECT WITHIN THE SAME
31 WATERSHED FOR THE COST PER ACRE-FOOT OF STORAGE TO PROVIDE
32 EQUIVALENT PEAK MANAGEMENT CONTROL FOR THE 3.55-HOUR, 6.6-
33 INCH STORM EVENTS. IN ORDER TO BE GRANTED RELIEF FROM THE
34 THIRD ALTERNATIVE MANAGEMENT STRATEGY, THE DEVELOPER MUST
35 SATISFY THE REQUIREMENTS FOR RELIEF FROM THE FIRST AND SECOND
36 ALTERNATIVE MANAGEMENT STRATEGIES AND PROVE THAT THERE IS
37 NO CAPITAL PROJECT IN THE WATERSHED AVAILABLE TO PAY INTO.
38 4. PROVIDE UP TO AND INCLUDING MANAGEMENT FOR THE 24-HOUR, 100-
39 YEAR STORM EVENTS ON-SITE. PAY A FEE IN LIEU INTO AN ESTABLISHED
40 STORMWATER BANK LOCATED WITHIN THE SAME WATERSHED BASED ON
41 THE REQUIRED PEAK RUNOFF RATE REDUCTION TO MANAGE THE 3.55-
42 HOUR, 6.6-INCH STORM EVENTS.