



# Stormwater Management Requirements

## Chapter 2

# When Stormwater Rules are in Effect

- Major Substantial Improvement (MSI)
  - Construction costs for building renovation/addition are greater than or equal to 50% of the pre-project assessed value of the structure.
  - AND Combined footprint of structure(s) exceeding the cost threshold and any land disturbance are greater than or equal to 5,000 square feet.
- Major Land Disturbing (MLD)
  - Activity that disturbs, or is part of a common plan of development that disturbs, 5,000 square feet or greater of land area

# Examples of Major Substantial Improvement

## Example 1

Building 1  
Footprint = 5,000 square feet  
Construction cost  $\geq$  50% assessed value of building

Retention Standard for 5,000 square feet (Building 1)

0.8 inches

## Example 2

Building 1  
Footprint = 4,000 square feet  
Construction cost  $\geq$  50% assessed value of building

Building 2  
Footprint = 1,000 square feet  
Construction cost  $\geq$  50% assessed value of building

Retention Standard for 5,000 square feet (Building 1 and Building 2)

0.8 inches

## Example 3

Building 1  
Footprint = 4,000 square feet  
Construction cost  $\geq$  50% assessed value of building

Land Disturbance  
= 1,000 square feet

Retention Standard for 4,000 square feet (Building 1)

0.8 inches

Retention Standard for 1,000 square feet (Land Disturbance)

0.8 inches

# Examples of Major Substantial Improvement

## Example 4

Building 1 Footprint = 4,000 square feet Construction cost $\geq$ 50% assessed value of building	Land Disturbance = 5,000 square feet
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Retention Standard for 4,000 square feet (Building 1)	0.8 inches
Retention Standard for 5,000 square feet (Land Disturbance)	1.2 inches

## Example 5

Building 1 Footprint = 4,000 square feet Construction cost $\geq$ 50% assessed value of building	Land Disturbance = 5,000 square feet	Public Right-of-Way (PROW) Land Disturbance = 1,000 square feet
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Retention Standard for 4,000 square feet (Building 1)	0.8 inches
Retention Standard for 5,000 square feet (Land Disturbance)	1.2 inches
Retention Standard for 1,000 square feet (PROW Land Disturbance)	1.2 inches to the maximum extent practicable (MEP)

Note: Stormwater from PROW must be managed.

# Examples of Major Substantial Improvement

## Example 6

Building 1 Footprint = 4,000 square feet Construction cost $\geq$ 50% assessed value of building	Land Disturbance = 4,000 square feet	Public Right-of-Way (PROW) Land Disturbance = 1,000 square feet
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Retention Standard for 4,000 square feet (Building 1)	0.8 inches
Retention Standard for 4,000 square feet (Land Disturbance)	1.2 inches
Retention Standard for 1,000 square feet (PROW Land Disturbance)	1.2 inches to the MEP

Note: Stormwater from PROW must be managed.

## Example 7

Building 1 Footprint = 4,000 square feet Construction cost $\geq$ 50% assessed value of building	Public Right-of-Way (PROW) Land Disturbance = 1,000 square feet
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Retention Standard for 4,000 square feet (Building 1)	0.8 inches
Retention Standard for 1,000 square feet (PROW Land Disturbance)	1.2 inches to the MEP

Note: Stormwater from PROW must be managed.





# Anacostia Waterfront Development Zone (AWDZ)

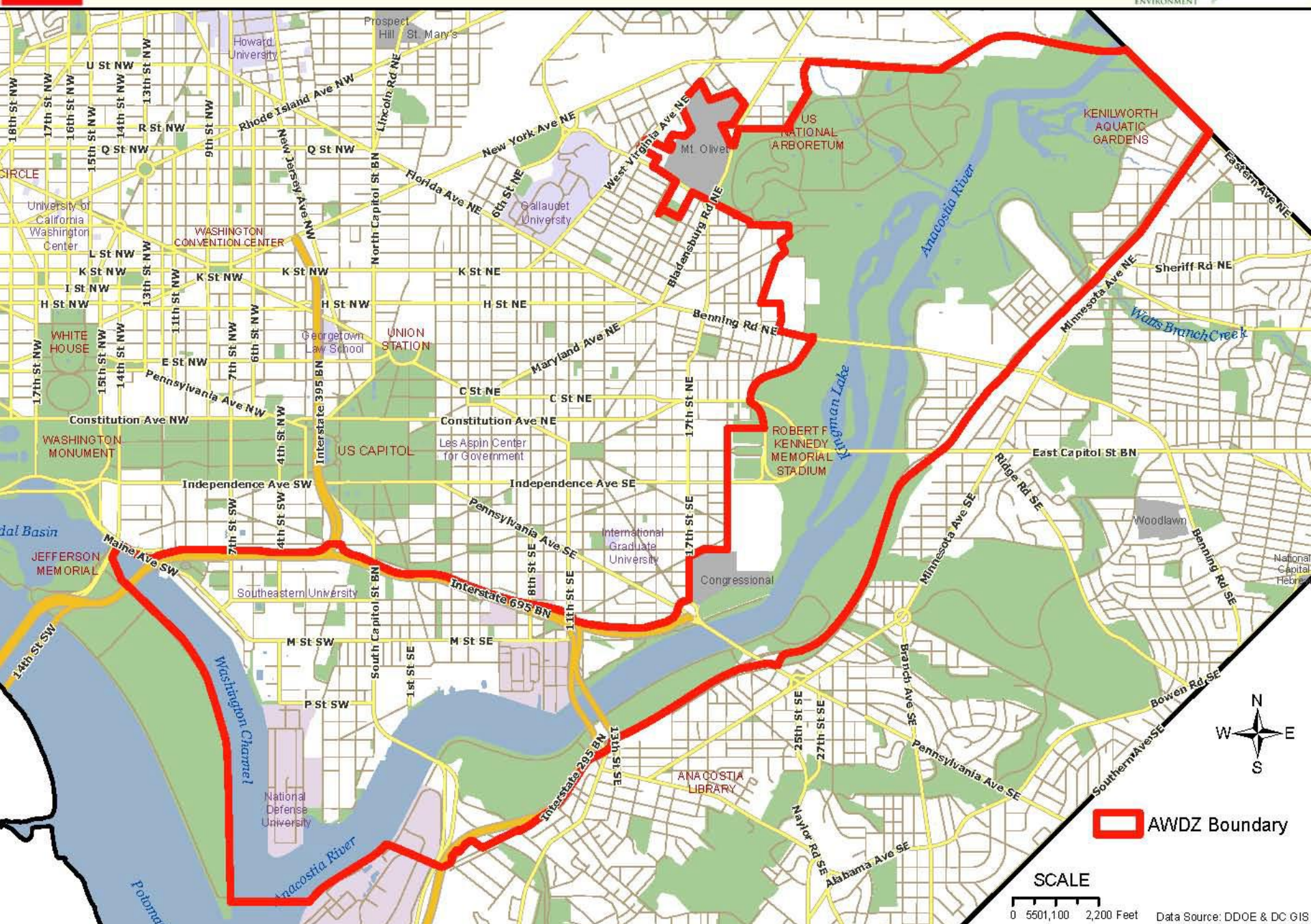
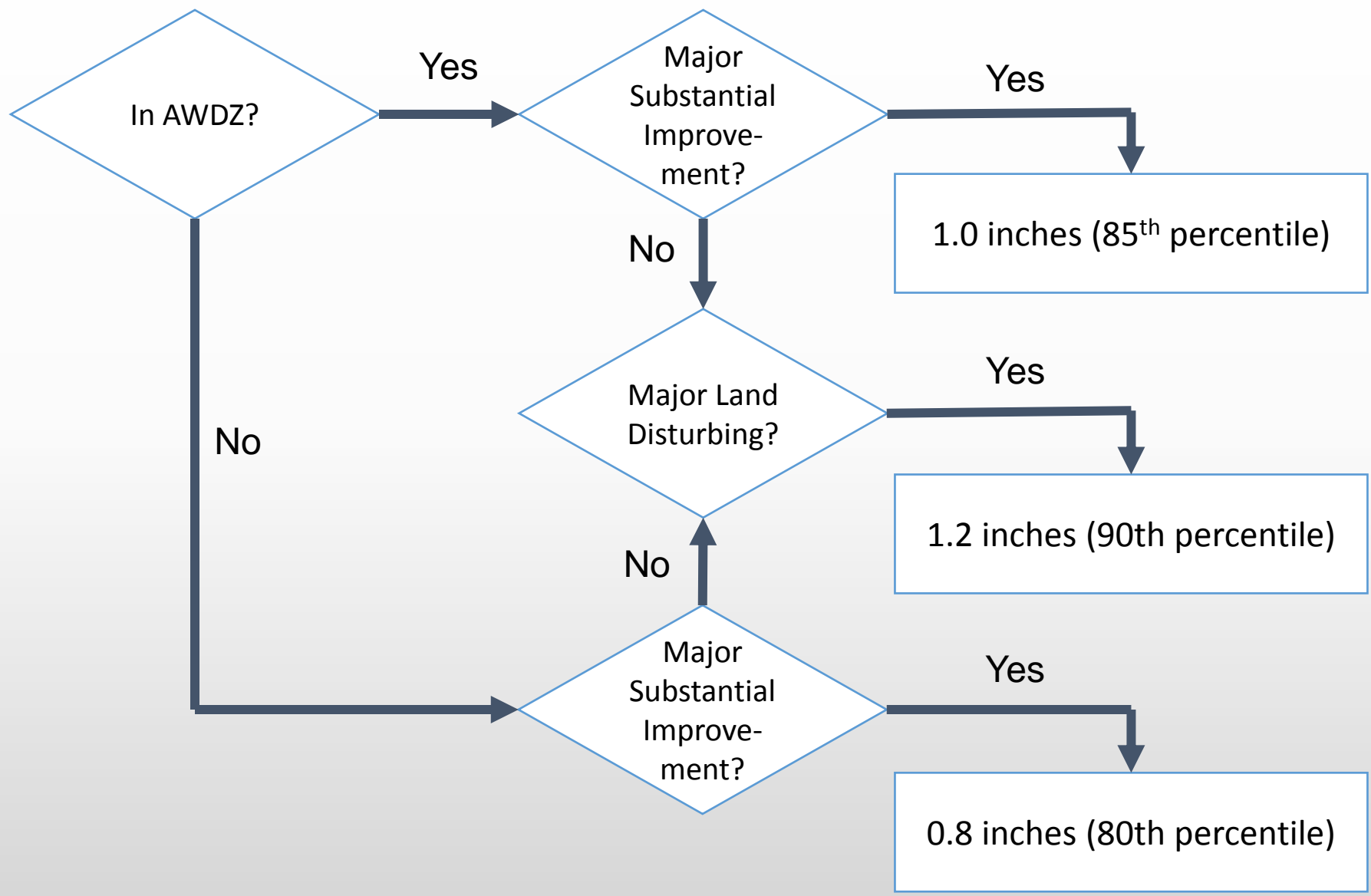


Figure 2.3: Precipitation Event



# Stormwater Retention Volume

$$\text{SWRv} = P (Rv_I * \%I + Rv_C * \%C + Rv_N * \%N) * SA * 7.48 / 12$$

- SWRv = Volume required to be retained on site (gal)
- P = Precipitation (in)
- $Rv_I = 0.95$  (runoff coefficient for impervious cover)
- $Rv_C = 0.25$  (runoff coefficient for compacted cover)
- $Rv_N = 0.0$  (runoff coefficient for natural cover)
- %I = % of site in impervious cover
- %C = % of site in compacted cover
- %N = % of site in natural cover
- SA = Surface area (square feet)



Figure 2.4: Overall Requirements

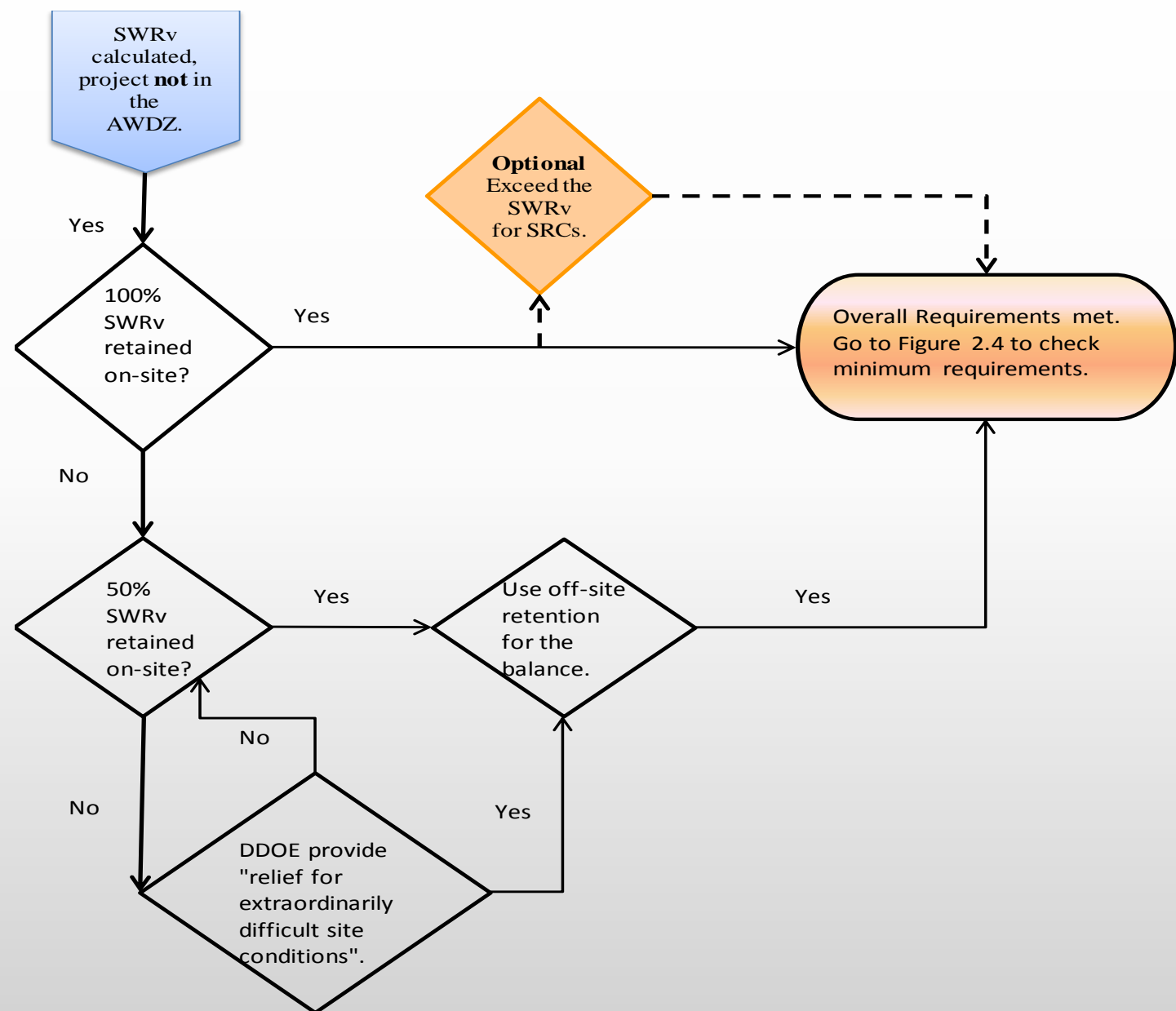
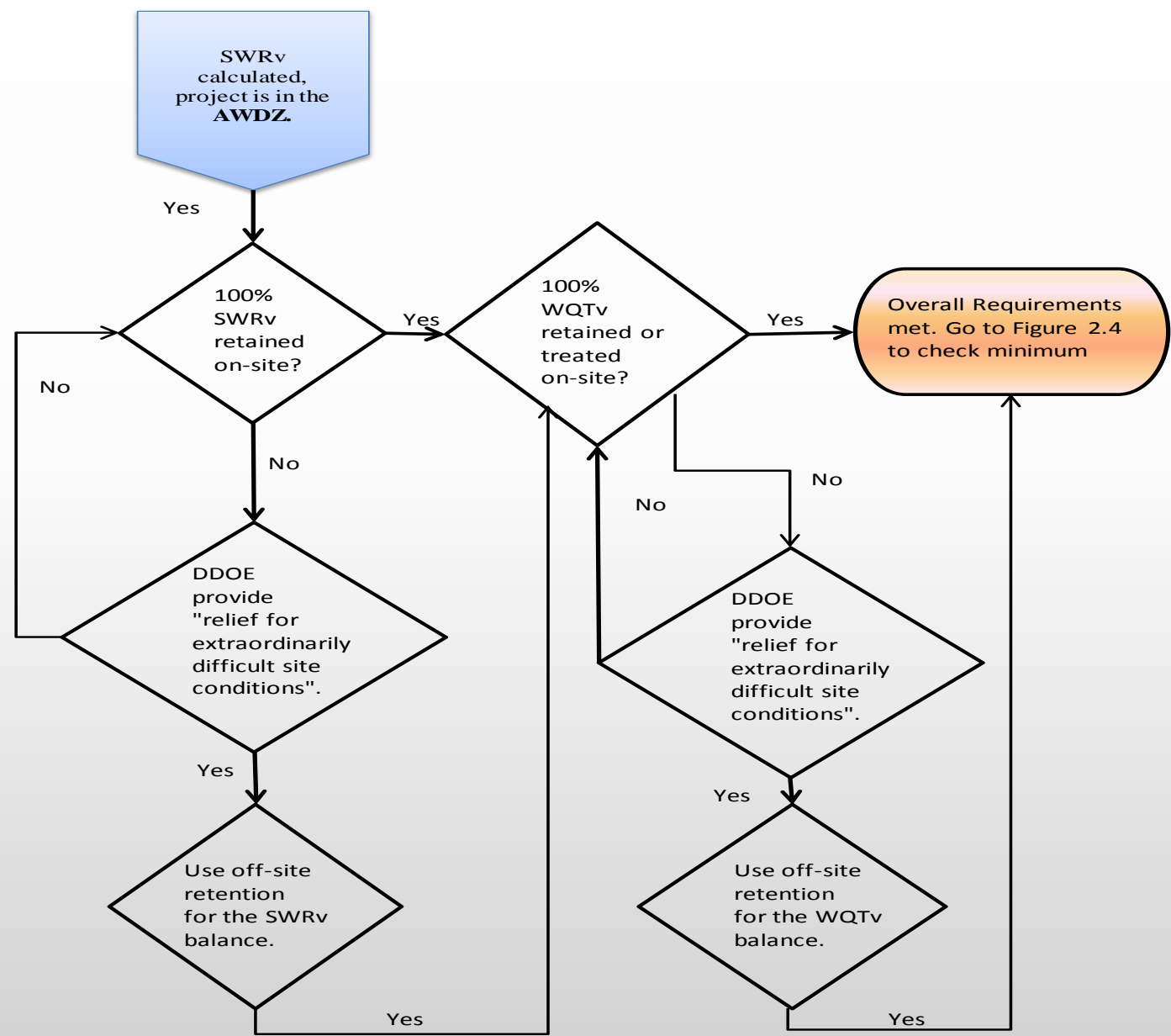
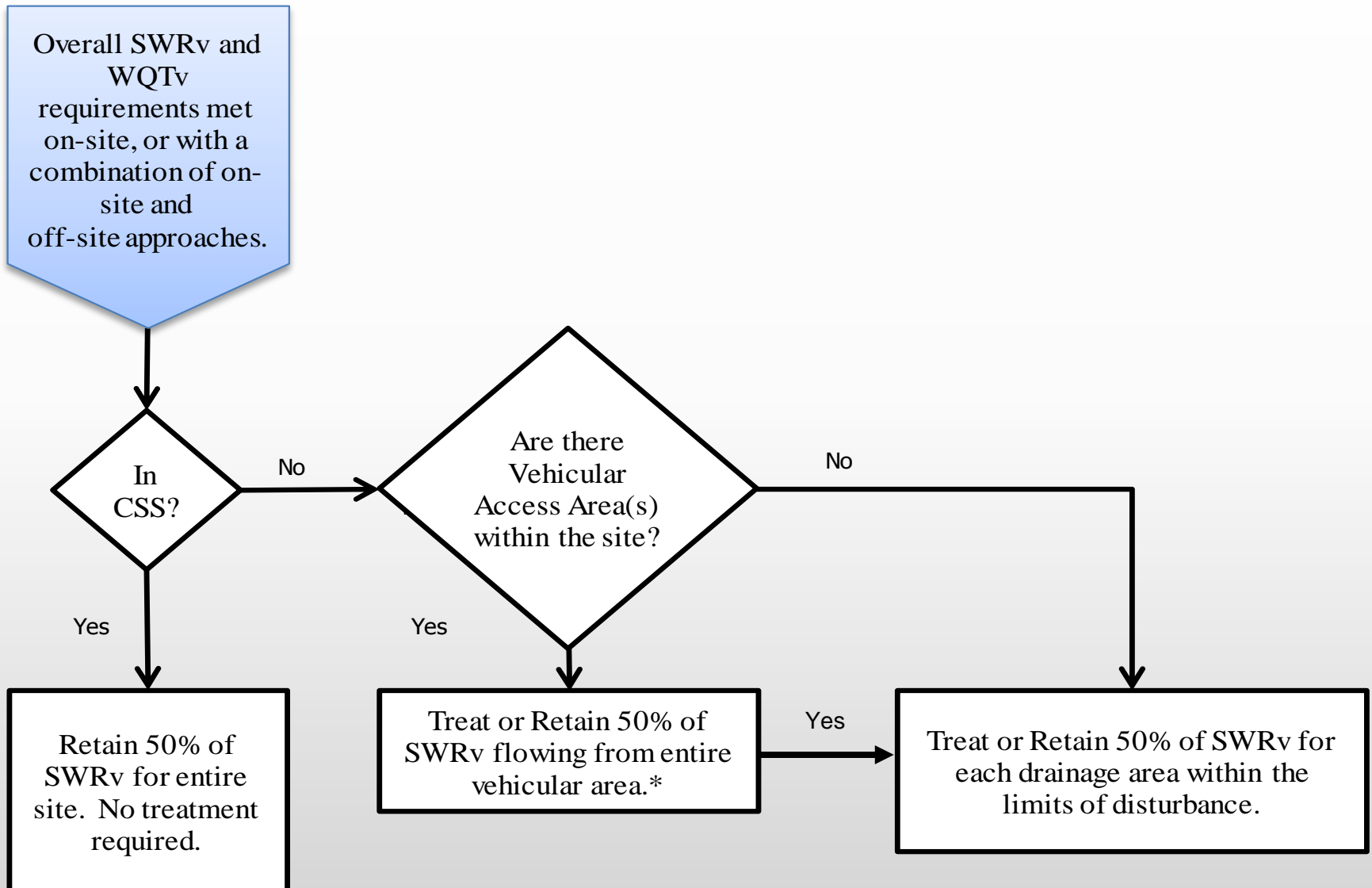


Figure 2.5: AWDZ Requirements



# Figure 2.6: Minimum Requirements



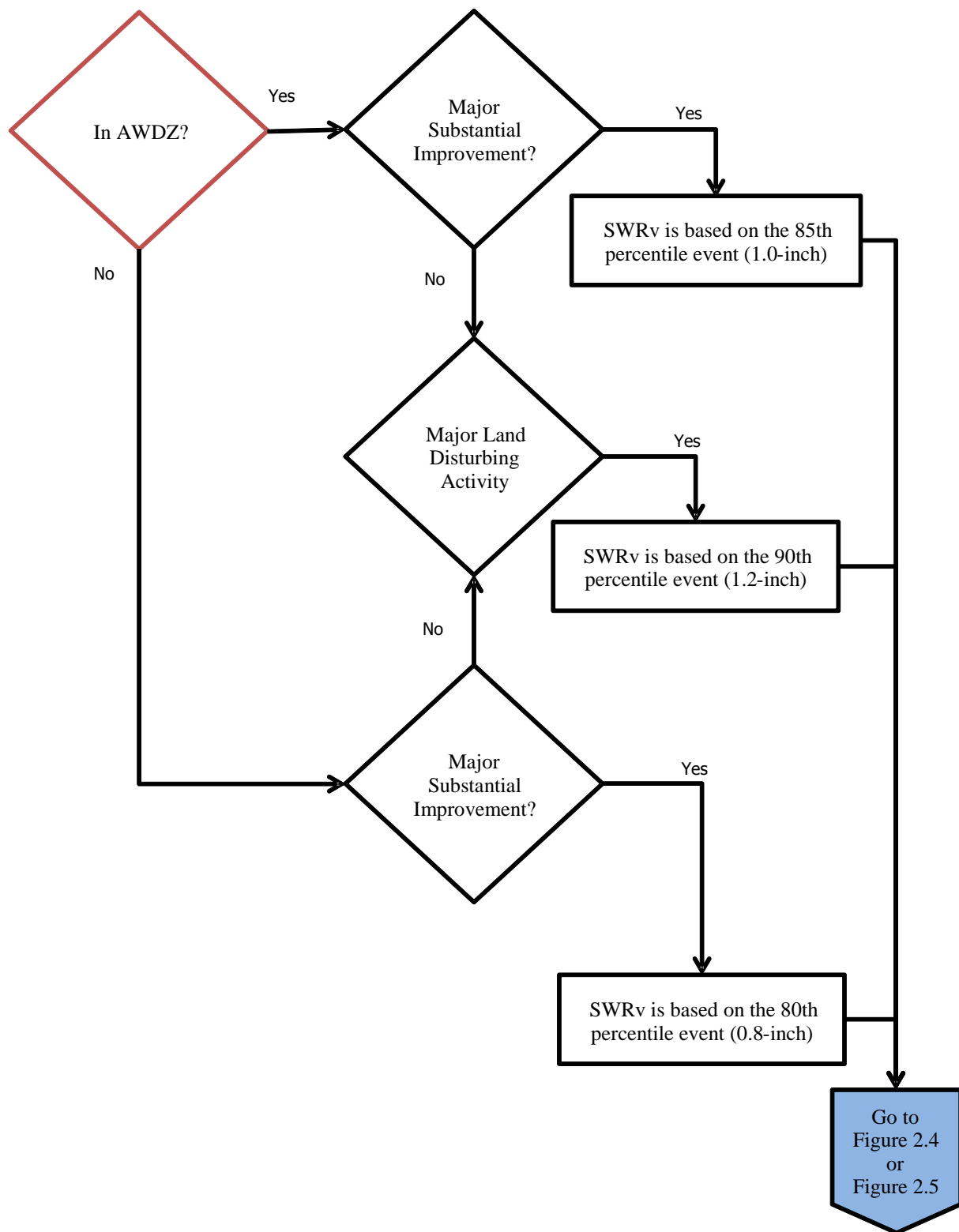
# Quantity Control Requirements:

- 2-year storm: control peak discharge to pre-development conditions.
- 15-year storm: control peak discharge to pre-project conditions.

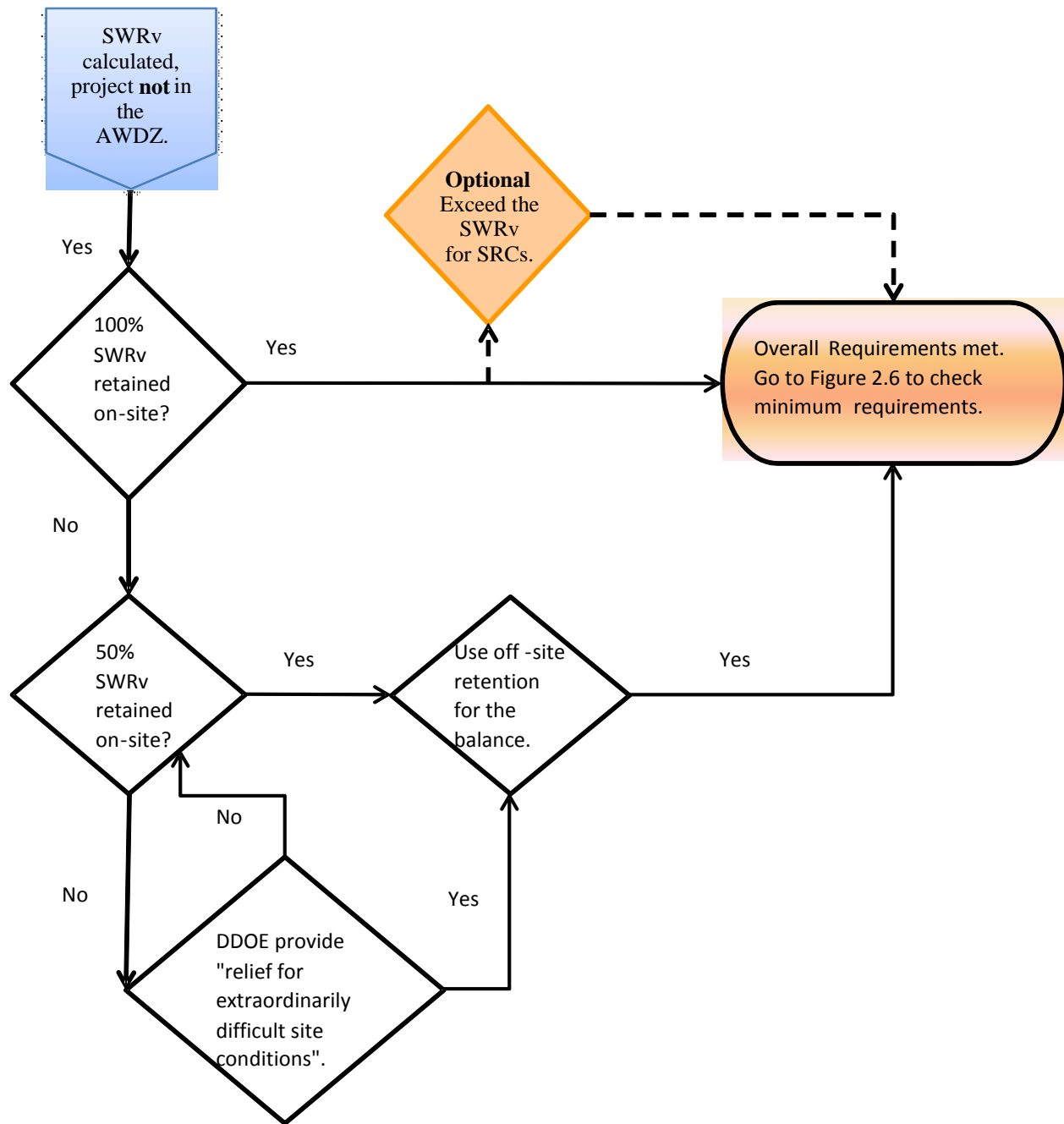


**Table 2.1 Sizing Criteria for Stormwater Management Performance Requirements**

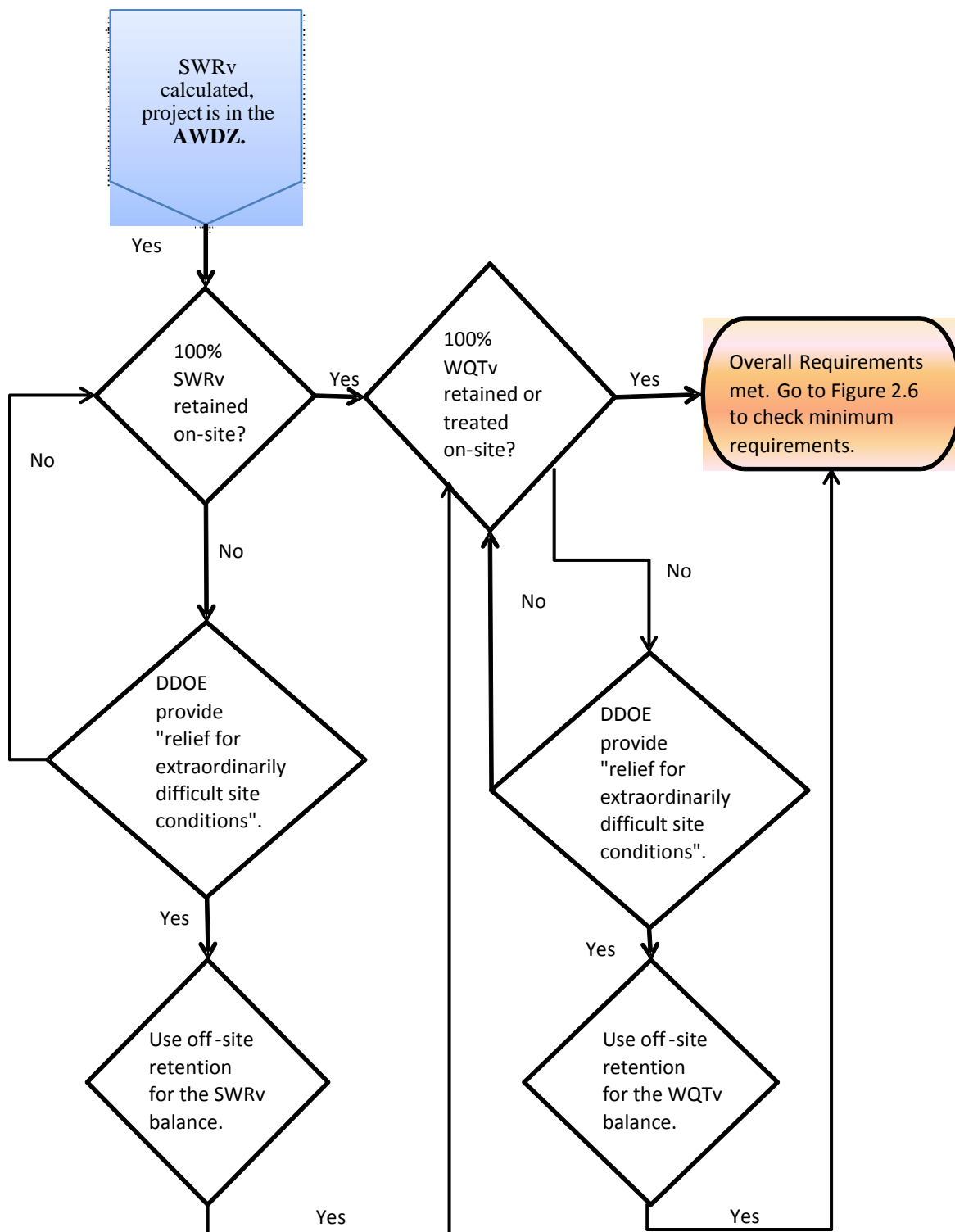
Sizing Criteria	Description of Stormwater Sizing Criteria
Stormwater Retention Volume ( $SWR_v$ ) (gal)	$SWR_v = [P \times [(R_{vI} \times \%I) + (R_{vC} \times \%C) + (R_{vN} \times \%N)] \times SA] \times 7.48/12$ <p>where:</p> <p><math>SWR_v</math> = volume required to be retained on site (gal)</p> <p><math>P</math> = variable percentile rainfall event for the District dependent on regulatory trigger (see next criterion)</p> <p><math>R_{vI}</math> = 0.95 (runoff coefficient for impervious cover)</p> <p><math>R_{vC}</math> = 0.25 (runoff coefficient for compacted cover)</p> <p><math>R_{vN}</math> = 0.00 (runoff coefficient for natural cover)</p> <p><math>\%I</math> = percent of site in impervious cover (decimal)</p> <p><math>\%C</math> = percent of site in compacted cover (decimal)</p> <p><math>\%N</math> = percent of site in natural cover (decimal)</p> <p><math>SA</math> = surface area (ft<sup>2</sup>)</p> <p>7.48 = conversion factor, converting cubic feet to gallons</p> <p>12 = conversion factor, converting inches to feet</p>
Precipitation value selected based on Regulatory Trigger ( $P$ )	<p>Major Land-Disturbing Activity (AWDZ and District-wide): 90th percentile event (1.2 inches)</p> <p>Major Substantial Improvement Activity (AWDZ): 85th percentile event (1.0 inches)</p> <p>Major Substantial Improvement Activity (District-wide): 80th percentile event (0.8 inches)</p>
Reconstruction of public right-of-way	<p>Consult Appendix B</p> <p>Maximum Extent Practicable Process for Existing Public Right-of-Way</p>
Water Quality Treatment Volume ( $WQT_v$ ) (gal)  (applies only to regulated activity in the AWDZ area governed by the Anacostia Waterfront Environmental Standards Amendment Act of 2012)	$WQT_v = (P \times [(R_{vI} \times \%I) + (R_{vC} \times \%C) + (R_{vN} \times \%N)] \times SA] \times 7.48/12) - SWR_v$ <p>where:</p> <p><math>WQT_v</math> = volume required to be retained or treated, above and beyond the <math>SWR_v</math> (gal)</p> <p><math>SWR_v</math> = volume required to be retained on site (gal)</p> <p><math>P</math> = 95th percentile rain event for the District (1.7 inches)</p> <p><math>R_{vI}</math> = 0.95 (runoff coefficient for impervious cover)</p> <p><math>R_{vC}</math> = 0.25 (runoff coefficient for compacted cover)</p> <p><math>R_{vN}</math> = 0.00 (runoff coefficient for natural cover)</p> <p><math>\%I</math> = percent of site in impervious cover (decimal)</p> <p><math>\%C</math> = percent of site in compacted cover (decimal)</p> <p><math>\%N</math> = percent of site in natural cover (decimal)</p> <p><math>SA</math> = surface area (ft<sup>2</sup>)</p> <p>7.48 = conversion factor, converting cubic feet to gallons</p> <p>12 = conversion factor, converting inches to feet</p>
2-Year Storm Control ( $Q_{p2}$ )	The peak discharge rate from the 2-year, 24-hour storm event controlled to the predevelopment peak discharge rate.
15-Year Storm Control ( $Q_{p15}$ )	The peak discharge rate from the 15-year, 24-hour storm event controlled to the preproject peak discharge rate.
Extreme Flood Requirements ( $Q_f$ )	<p>The peak discharge rate from the 100-year storm event controlled to the preproject peak discharge rate if the site:</p> <ol style="list-style-type: none"> <li>Increases the size of a Special Flood Hazard Area (SFHA) as delineated on the effective Flood Insurance Rate Maps (FIRM) or</li> <li>Meets the following two conditions: <ol style="list-style-type: none"> <li>Does not discharge to the sewer system and</li> <li>Has a post-development peak discharge rate for a 100-year frequency storm event that will cause flooding to a building.</li> </ol> </li> </ol>



**Figure 2.3 Determining the regulatory event used to calculate the SWRv.**

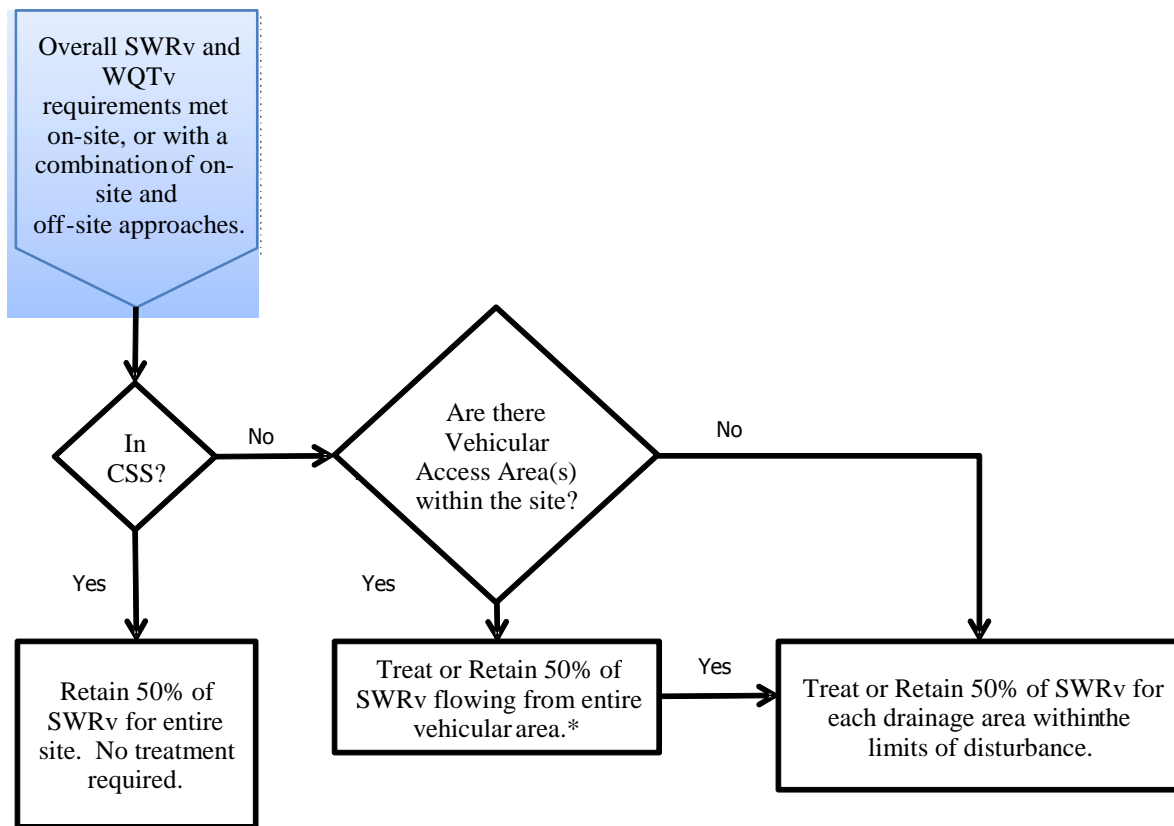


**Figure 2.4** Determining if overall retention requirements have been met, outside the AWDZ.



**Figure 2.5 Determining if overall retention and water quality treatment requirements have been met, inside the AWDZ for regulated activity governed by the Anacostia Waterfront Environmental Standards Amendment Act of 2012.**





\* Existing Public right-of-way (PROW) sites follow these guidelines to the maximum extent practicable (MEP). The MEP design and review process is detailed in Appendix B.

**Figure 2.6 Determining if minimum retention and water quality treatment requirements have been met.**